3001/3001A

DOCUMENTATION PACKAGE

VOL. 3

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DATE: JUL 17 1985

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NORLAND CORPORATION

A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON, WI 53538
TEL. (414) 563-8456 TELEX 26-5448

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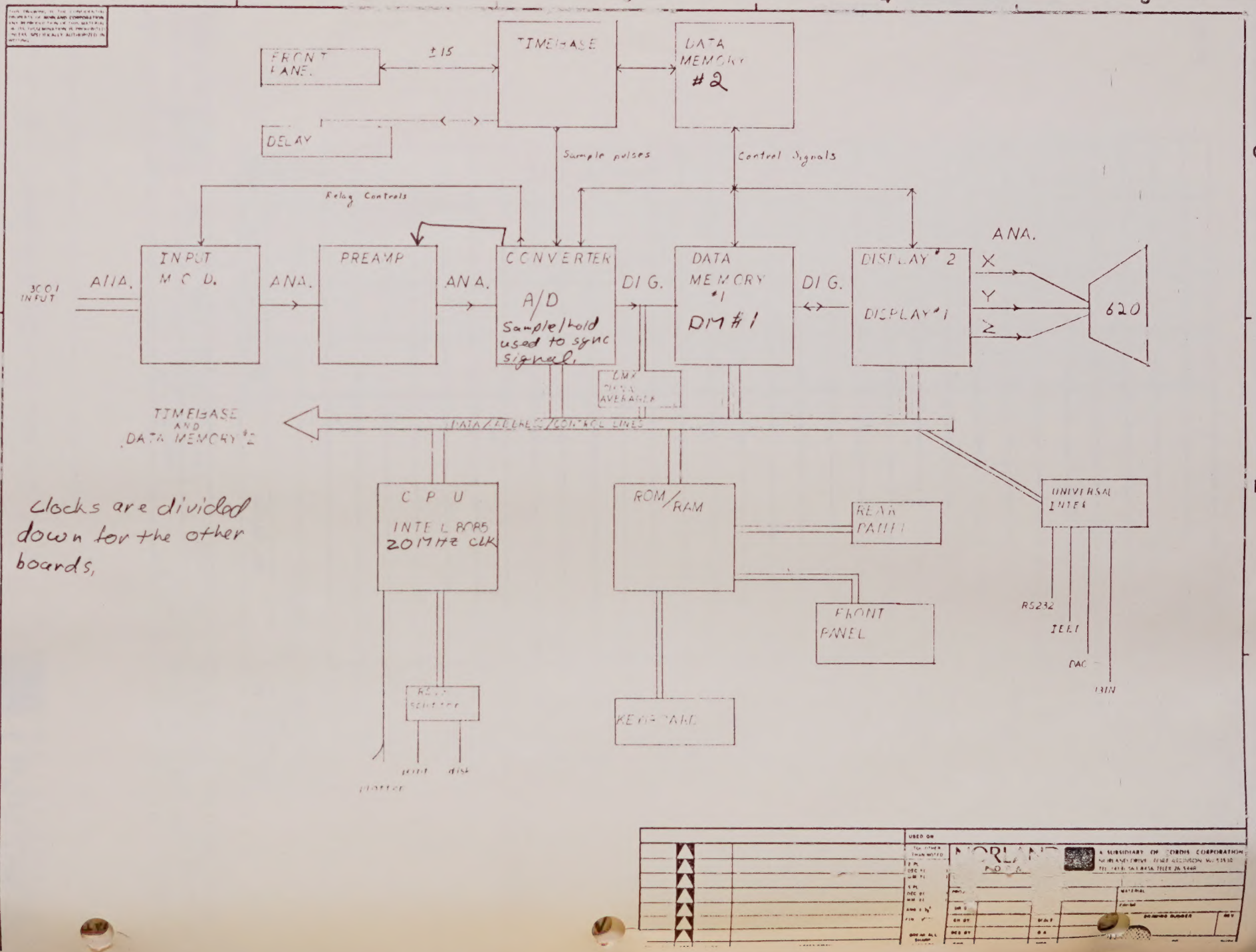

FRONT PANEL
±15
TIMEBASE
DATA MEMORY #2
DELAY
Sample pulses
Control Signals
Relay Controls
3001 INPUT
ANA.
INPUT M C D.
ANA.
PREAMP
ANA.
CONVERTER
A/D
Sample/hold used to sync signal.
DIG.
DATA MEMORY #1
DM #1
DIG.
DISPLAY #2
DISPLAY #1
ANA.
X
Y
Z
620
EMX DATA AVERAGER
TIMEBASE AND DATA MEMORY #2
DATA/ADDRESS/CONTROL LINES
C P U
INTEL 8085
20MHz CLK
ROM/RAM
REAR PANEL
FRONT PANEL
KEYBOARD
UNIVERSAL INTER
RS232
IEEE
DAC
GPIB
clocks are divided down for the other boards,

NORLAND CORPORATION

NUMBER 208A289D-G PAGE 1 OF 3

TITLE OPTION BOARD ASSEMBLY

INIT BY	KLUG	DATE	2-27-80	CH. BY	—	DATE	—				
ENG.	CPD	DATE	2-27-80	QA	MES	DATE	2-29-80	MFG.	DGH	DATE	2-28-80

REV.	ECN. NO.	REVISION	BY	DATE	CHK'D	APP'D
G	3093 3131	PER ECN's				CPD

NUMBER 208A289D-G

W.O. #	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER	208A289D-G		SHT. __ OF __
DR BY	DATE	Q.A.	DATE
DK	3/27/82	MG	3/29/82
PROJ ENG.	DATE	MFG	DATE
[illegible]	[illegible]	VGH	2-28-80

NAME: 3001 Option Board

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	208D289D	1	PC board (REV. A)	
2	1359021	3	.01 mfd	C1,C2,C3
3	1409301	6	10 mfd	C4,C5,C6,C7,C8,C9
4	1509001	1	200 mfd @ 25V	C13
5	1529035 or 1529024	3	.22 mfd	C10,C11,C12
6	1729000	3	IN4002	CR1,CR2,CR3
7	2529022	1	74S10	U4
8	2529128	1	74LS27	U5
9	2529169	1	74LS155	U6
10	2529171	3	74LS240	U1,U2,U3
11	4659021 or 4659023	3	Heat Sink	
12	3019005	3	LM340T-5.0 +5V Regulator	
13	4679289	12	Amp Connector #87227-8 (16 position)	
14	6259007	6	#6-32 Pem Stud	
15	6330002	6	#6 Small Pattern Hex Nut	
16	6481002	6	#6 Lockwasher	
17	7119000	1	Adhesive Color Dot (Orange)	

ECN	REV.	DATE	CHANGE
1672	A	7/24/79	Per ECN
2020	B	2/8/80	Per ECN
2076	C	2/14/80	Per ECN C OD
2138	D	3/17/80	Per ECN C 2 3
2576	F	12-30-80	PER ECN C PD

ECN	REV.	DATE	CHANGE
3573 3581	G	3-19-82	PER ECO

ECN	REV.	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

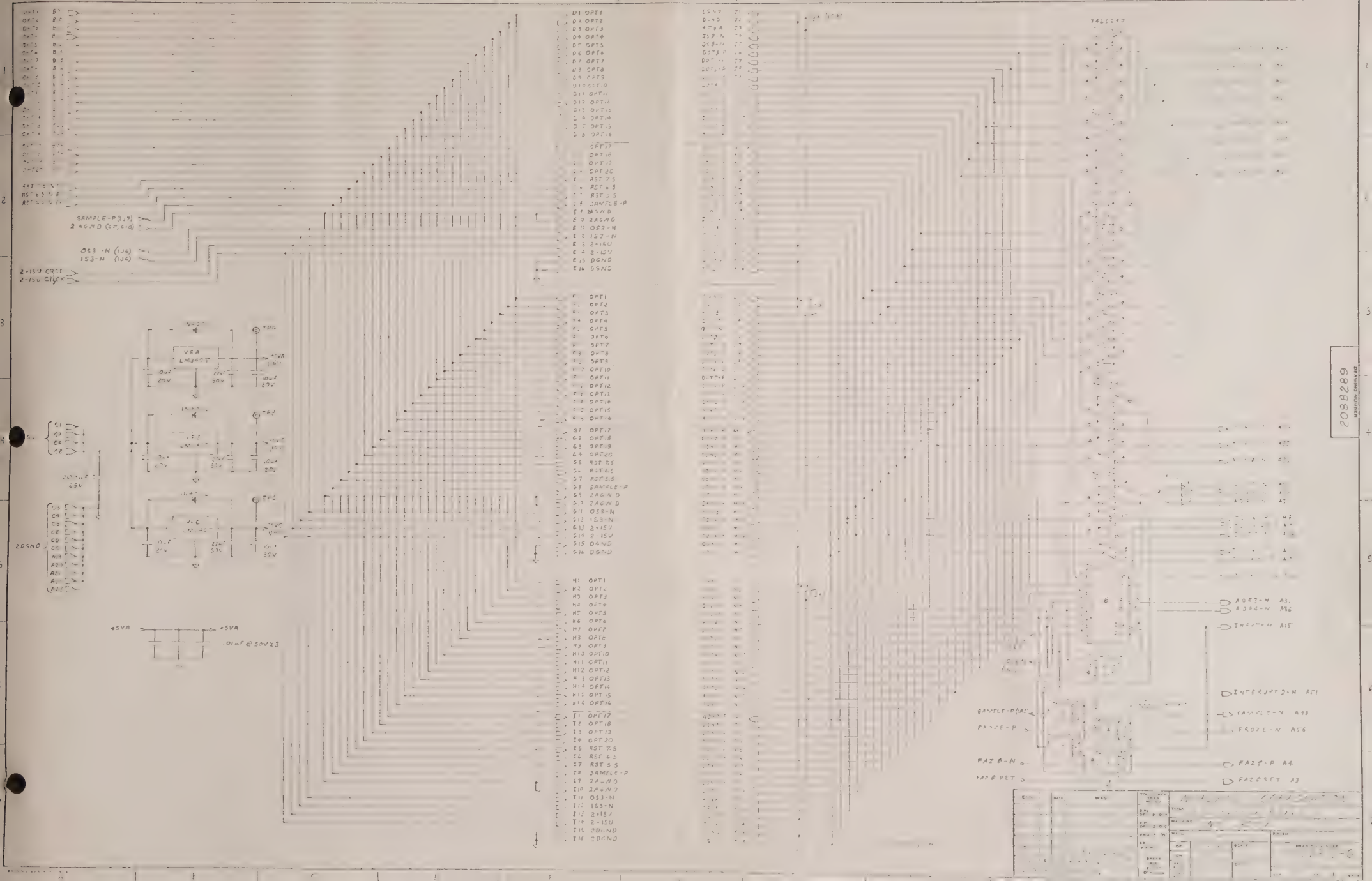
M.O.#	QTY.
C.O.#	DATE

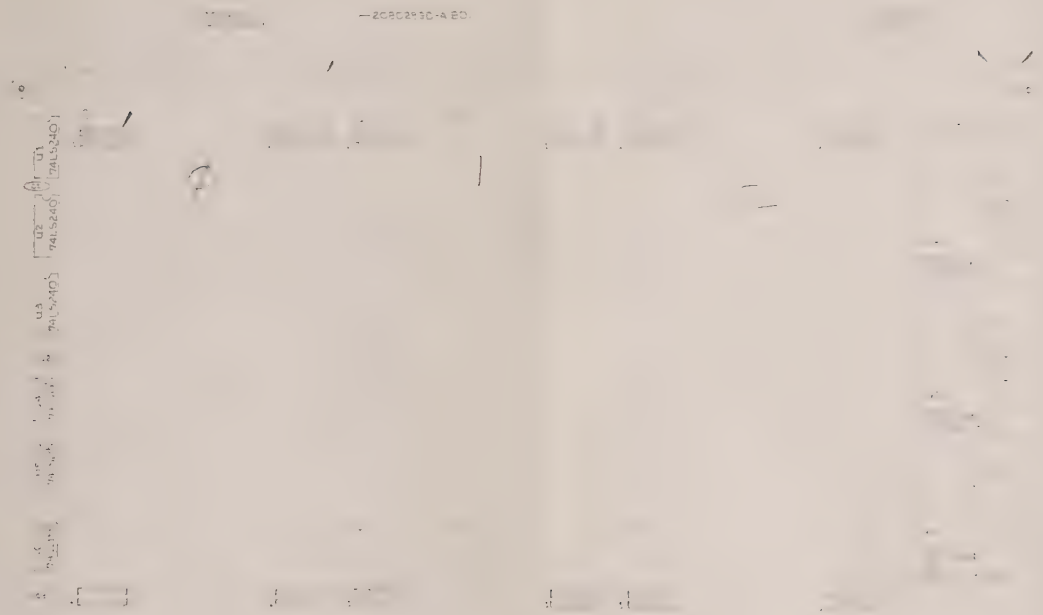
NUMBER 208A289D-G			SHT. 2 OF 2
DR BY	DATE	Q.A.	DATE
WS	2/27/80	MG	3/27/80
PROJ. ENG.	DATE	MFG.	DATE
CPJ	3/27/80	DH	2-28-80

NAME: 3001 Option Board

ITEM #	PART NUMBER	QTY.	DESCRIPTION
1	7700103	2	Card Extractor
2	7109025	.12'	Polyester Tape (1/2" wd.)
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

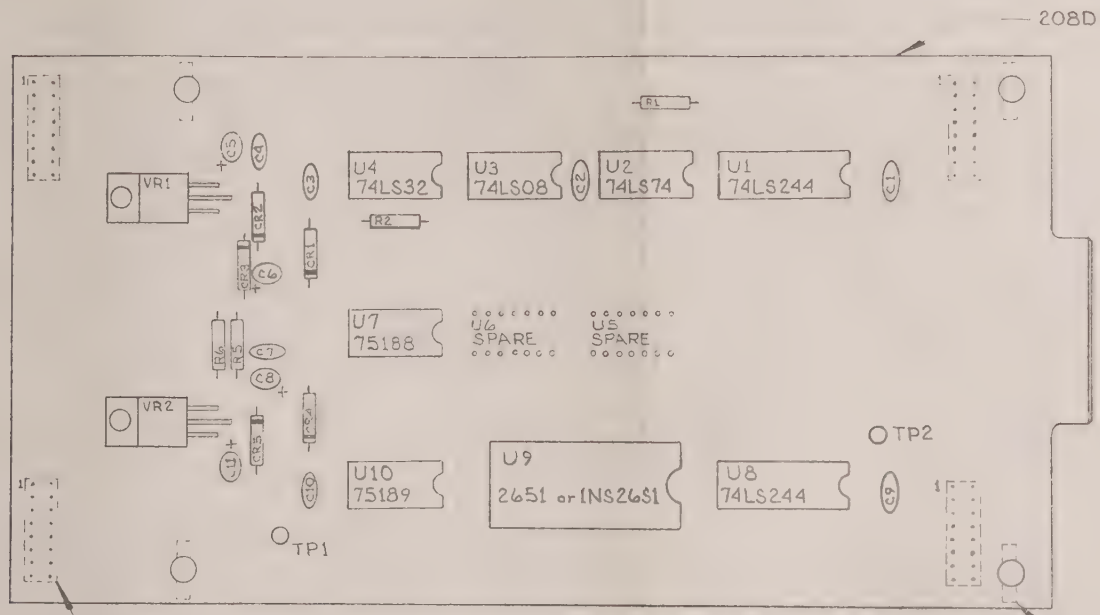
SON	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE


SAMPLE-P (U17)
2 AGND (C7, C10)
OS3 -N (U16)
IS3-N (U16)
2+15U CLOCK
2-15U CLOCK
VRA
LM340T
VRB
LM320T
VRC
LM340T
+5VA
.01uf @ 50V x3
2DGND
SAMPLE-P
FRAME-P
FAZ B-N
FAZ Ø RET
INTERRUPT2-N
SAMPLE-N
FRAME-N
FAZB-P
FAZRET
2088289
DRAWING NUMBER



VR1, VR2, VR3
TYPICAL

NORLAND



ECN NO	LETT	DATE	DESCRIPTION	
2576	C	12-30-80	PER ECN	CPD
1889	B	11-1-79	PER ECN	CPD
1563	A	10-4-79	PER ECN	CPD

USED ON

TOL. OTHER THAN NOTED
2 PL. DEC ±( ) MM. ±( )
3 PL. DEC ±( ) MM. ±( )
ANG ± ½°
FIN √
BREAK ALL SHARP CORNERS

NORLAND CORPORATION
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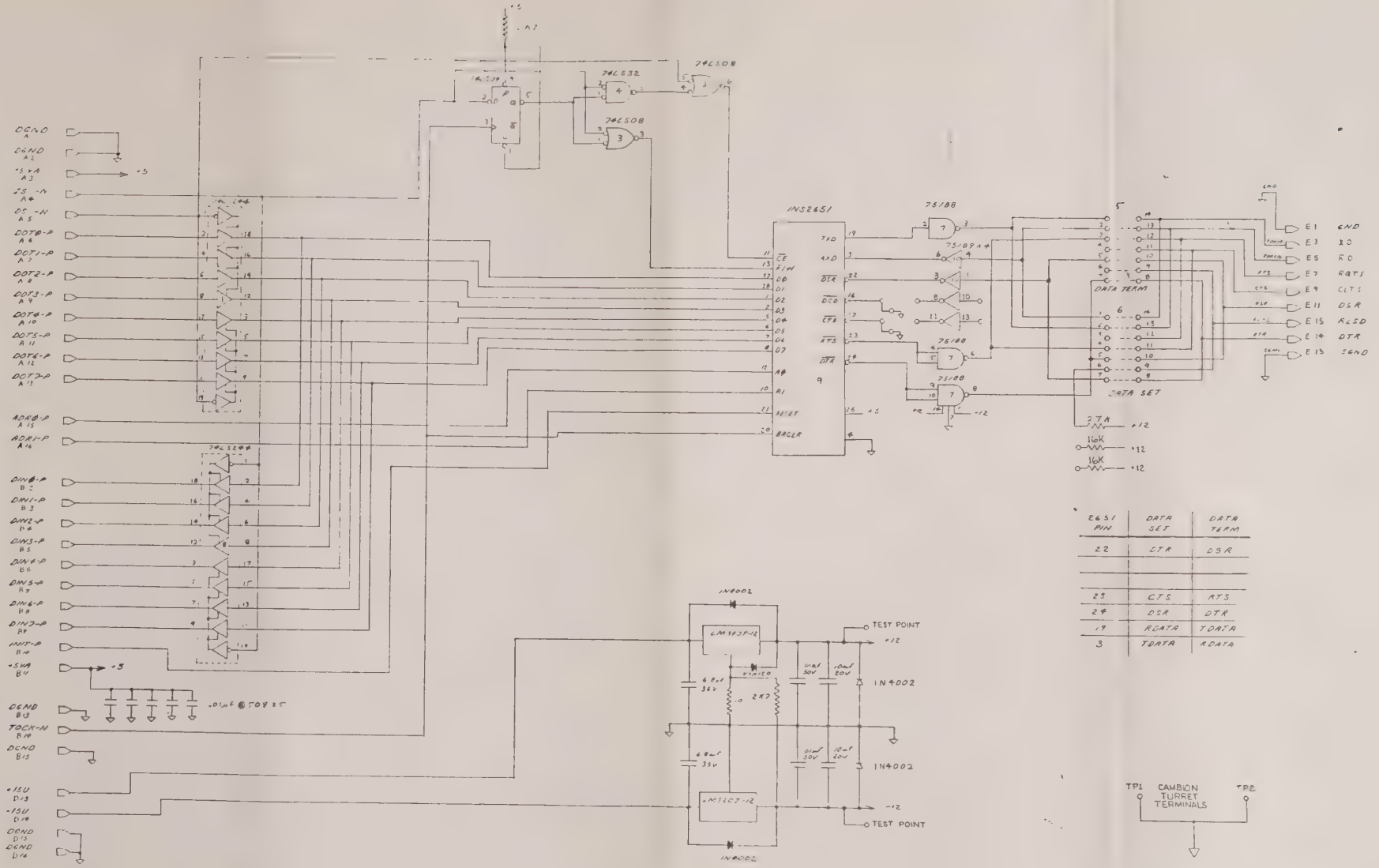
TITLE: RS232 MODULE BOARD ASSEMBLY

PROJECT	3001			MATERIAL	
DR BY	J. Dick	DATE	8-21-79	FINISH	
CH BY	J. Nicol	SCALE	~	DRAWING NUMBER	REV
DES BY	J. Nicol	Q A	MKS	208A290B	C
ENG.	CPD	MFG.		SHT 1 OF 1 SHTS	



2651 PIN	DATA SET	DATA TERM
22	CTR	DSR
23	CTS	RTS
24	DSR	DTR
19	RDATA	TDATA
3	TDATA	RDATA

ECN		DATE	WAS
1576	C	2-3-84	PER ECN CPD
563	A	7-30-80	UPDATE PCBD CPD

TOL. OTHER THAN NOTED: 3 PL DEC ± .005; 2 PL DEC ± .010; ANG. ± 1°; 63 V FINISH; BREAK ALL SHARP EDGES

NORLAND CORPORATION

TITLE: RS 232 MODULE

MACHINE: N1 3001

MATL. —

FINISH —

DR. J A F

CH. — — —

PROG. APPR. — — —

DATE 1/16/84

SCALE —

DRAWING NUMBER 20862700-C

DRAWING NUMBER

W.O. #	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 208A408B-C			SHT. 1 OF 2
DR. BY	DATE	Q.A.	DATE
JMB	9/11/79	MAD	12379
PROJ. ENG.	DATE	MFG.	DATE
CPD	9/28/79	DSH	11-6-79

NAME: Digital I/O Module

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	208D408E	1	PC Board Rev A	
2	1002072	3	1K	R1-R3
3	1002096	4	10K	R4-R7
4	1359021	8	.01 mfd @ 50V	C1-C8
5	1749000	2	1N914 Diodes	CR1, CR2
6	2529015	1	74LS04	U16
7	2529019	1	74LS08	U17
8	2529123	1	74LS00	U11
9	2529132	2	74LS74	U8, U10
10	2529153	1	74LS28	U9
11	2529155	1	74LS38	U13
12	2529169	1	74LS155	U1
13	2529172	3	74LS244	U4, U7, U12
14	2529223	2	74LS273	U3, U6
15	2529239	2	74LS373	U2, U5
16	3759004	2	2N5172	Q1, Q2
17	4219055	2	RA30421051 Relays	U14, U15

ECN	REV.	DATE	CHANGE
1656	A	8/13/79	Per ECN CPD
2120	B	3/10/80	Per ECN CPD
2576	C	12-30-80	PER ECN CPD

ECN	REV.	DATE	CHANGE

ECN	REV.	DATE	CHANGE

W.O.	QTY.
JOB #	DATE

PARTS LIST

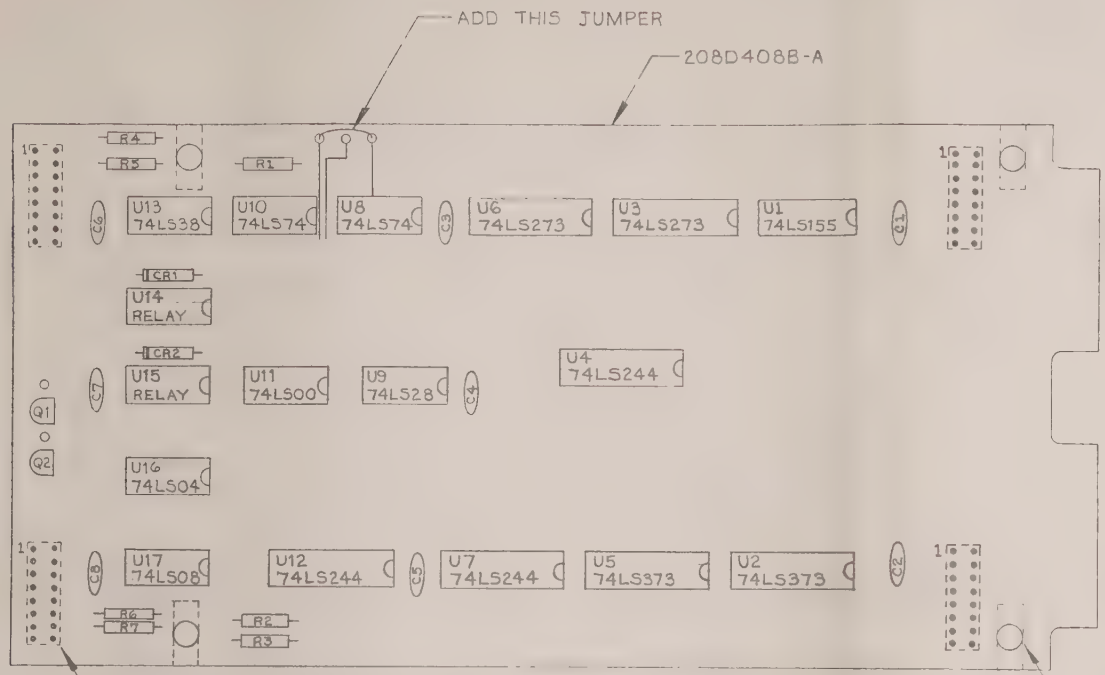
NORLAND CORPORATION

NUMBER 208A408B-C			SHT. 2 OF
DR. BY	DATE	Q.A.	DATE
VMB	7/16/79	MLS	12379
PROJ. ENG.	DATE	MFG.	DATE
CLJ	7/23/79	[illegible]	11-6-79

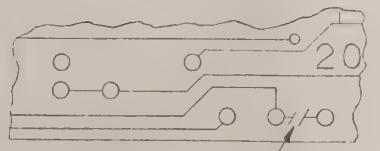
NAME: Digital I/O Module

ITEM #	PART NUMBER	QTY.	DESCRIPTION
1	4679510	4	Connectors Amp #86418-5
2	7709500	4	Plastic Standoffs
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE



DETAIL A



ECN. NO	LETT	DATE	DESCRIPTION
2576	C	12-30-80	PER ECN CPD

USED ON

TOL OTHER THAN NOTED
2 PL DEC ±(—)
MM. ±(—)
3 PL DEC ±(—)
MM ±(—)
ANG ± ½°
FIN. √
BREAK ALL SHARP CORNERS

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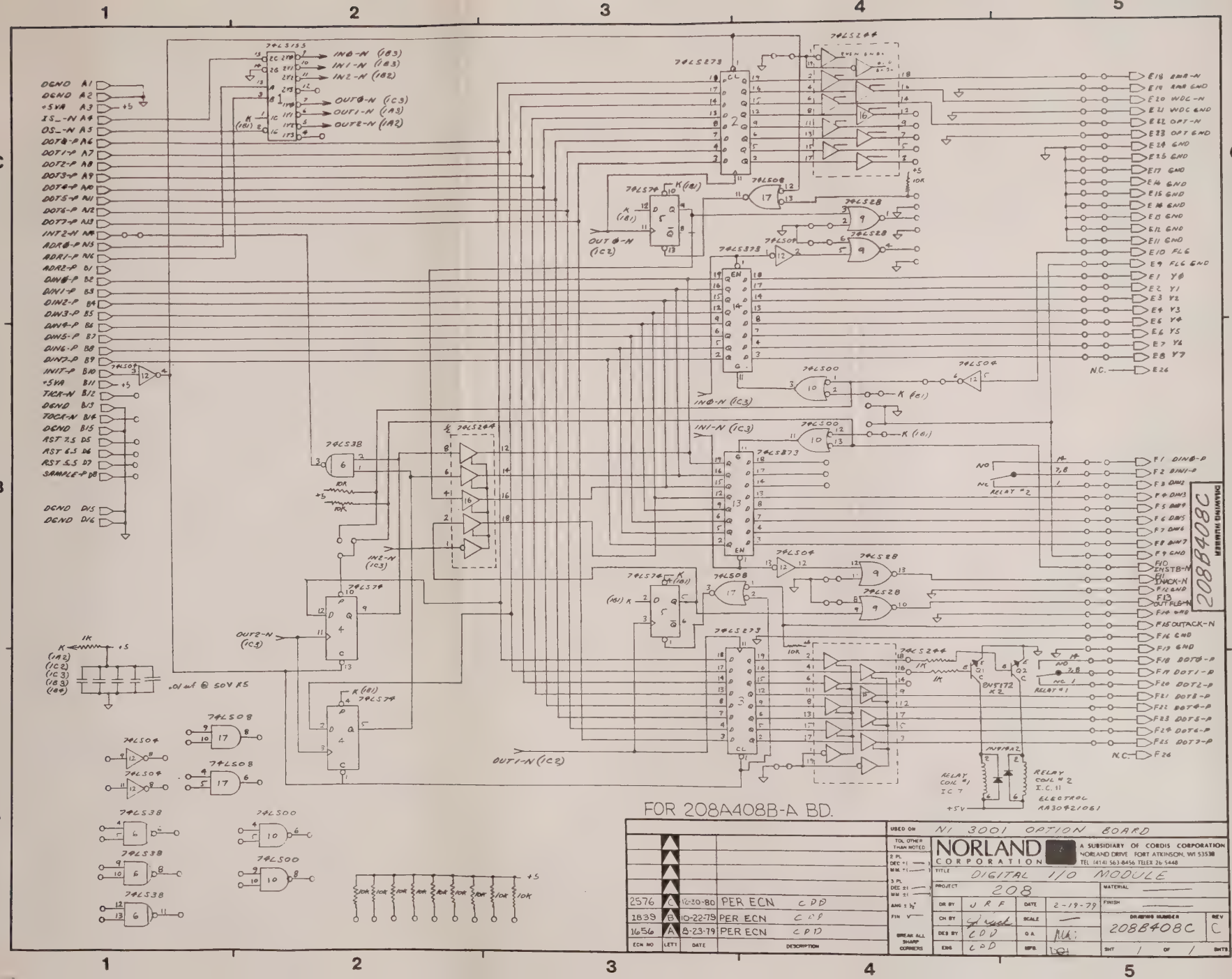
TITLE: DIGITAL I/O MODULE BOARD ASSEMBLY

PROJECT	3001			MATERIAL	~
DR BY	D. Flug	DATE	3/13/80	FINISH	~
CH. BY	J. Dick	SCALE	~	DRAWING NUMBER	REV.
DES. BY	CPD	Q.A.	3-17-80	208A408B	C
ENG.	CPD	MFG.			



ECN NO	LETT	DATE	DESCRIPTION
2576	C	12-20-80	PER ECN C P D
1839	B	10-22-79	PER ECN C P D
16546	A	8-23-79	PER ECN C P D

TOL OTHER THAN NOTED: 2 PL DEC ±1, MM ±1; 3 PL DEC ±1, MM ±1; ANG ± ½°; FIN √; BREAK ALL SHARP CORNERS

USED ON: NI 3001 OPTION BOARD

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TITLE: DIGITAL I/O MODULE

PROJECT	208	MATERIAL	
DR BY	J R F	DATE	2-19-79
CH BY		SCALE	
DES BY	C D D	Q.A.	
ENG	C P D	MFG.	
DRAWING NUMBER	208B408C	REV	C
SHT	1 OF 1	SHTS	

208B408C
DRAWING NUMBER

W.O. #	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 208A409B-A SHT. 1 OF 2

DR. BY	DATE	Q.A.	DATE
[illegible]	[illegible]	[illegible]	[illegible]
PROJ. ENG.	DATE	MFG.	DATE
[illegible]	[illegible]	[illegible]	[illegible]

NAME: DAC Module

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	208D409C	1	PC Board	
2	1002024	1	10 ohm 1/4 watt 5%	R6
3	1002033	1	24 ohm 1/4 watt 5%	R4
4	1002082	1	2.7K 1/4 watt 5%	R2
5	1002084	2	3.3K 1/4 watt 5%	R5, R3
6	1359021	11	.01 mfd @ 50V	C1-C4, C7, C9, C10, -C14
7	1359036	1	47 pf @ 600V	C6
8	1409301	2	10 mfd @ 20V	C8, C15
9	1409316	2	6.8 mfd @ 35V	C5, C12
10	1729000	6	1N4002	CR1-CR5, CR7
11	1749005	1	VSK120	CR6
12	2489007	1	AD561J	U2
13	2529169	1	74LS155	U1
14	2529174	3	74LS388	U6, U7, U8
15	3009016	1	LM748	U5
16	3019010	1	LM340T-15	VR2
17	3019012	1	LM320T-15	VR1

ECN	REV.	DATE	CHANGE
1838	A	10/10/79	Per ECN [illegible]

ECN	REV.	DATE	CHANGE

ECN	REV.	DATE	CHANGE

W.O.	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

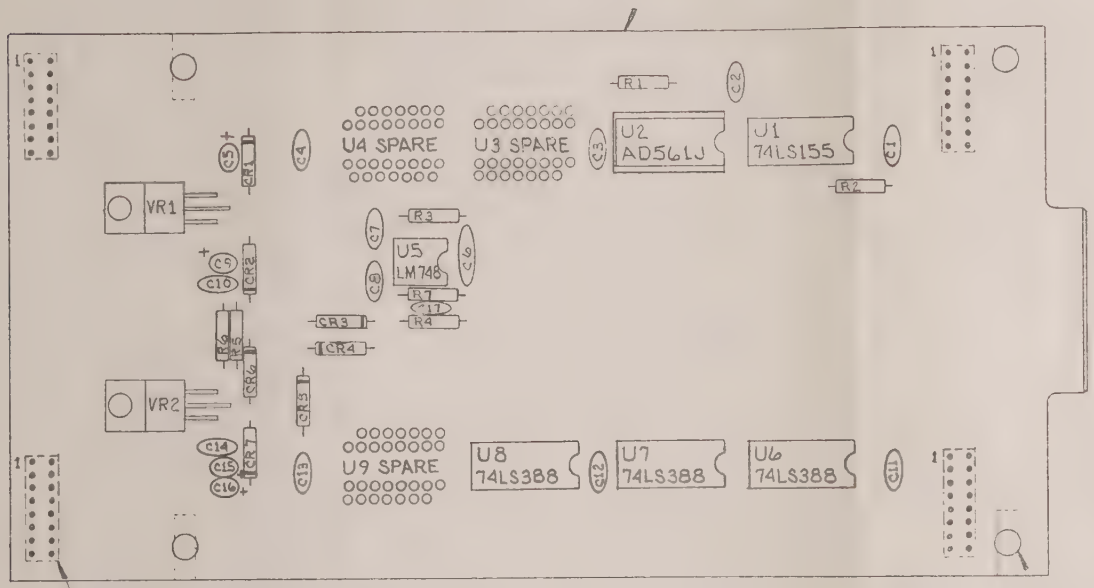
NUMBER 208A409B-A			SHT. 2 OF 2
DR. BY	DATE	Q A.	DATE
[illegible]	[illegible]	[illegible]	[illegible]
PROJ. ENG.	DATE	MFG.	DATE
[illegible]	[illegible]	[illegible]	11-11-77

NAME: DAC Module

ITEM #	PART NUMBER	QTY.	DESCRIPTION
1	3509018	1	16 pin socket U2
2	4679510	4	Connector Amp 86418-5
3	7709500	4	Plastic Standoffs
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV	DATE	CHANGE

208D409B



(4) 4679510 CONNECTORS
NOTE: ASSEMBLE TO SOLDER SIDE OF BOARD.

INSTALL (4) 7709500 PLASTIC STANDOFFS TO SOLDER SIDE. (NOTE: LARGER TABS TO SEAT UP AGAINST BOARD.)

NOTE:
DO NOT STUFF R7 & C17 & R1

ECN NO	LETT	DATE	DESCRIPTION
1838	A	10-10-79	PER ECN CPD

USED ON

TOL OTHER THAN NOTED
2 PL DEC ±( ) MM ±( )
3 PL DEC ±( ) MM ±( )
ANG ± ½°
FIN √
BREAK ALL SHARP CORNERS

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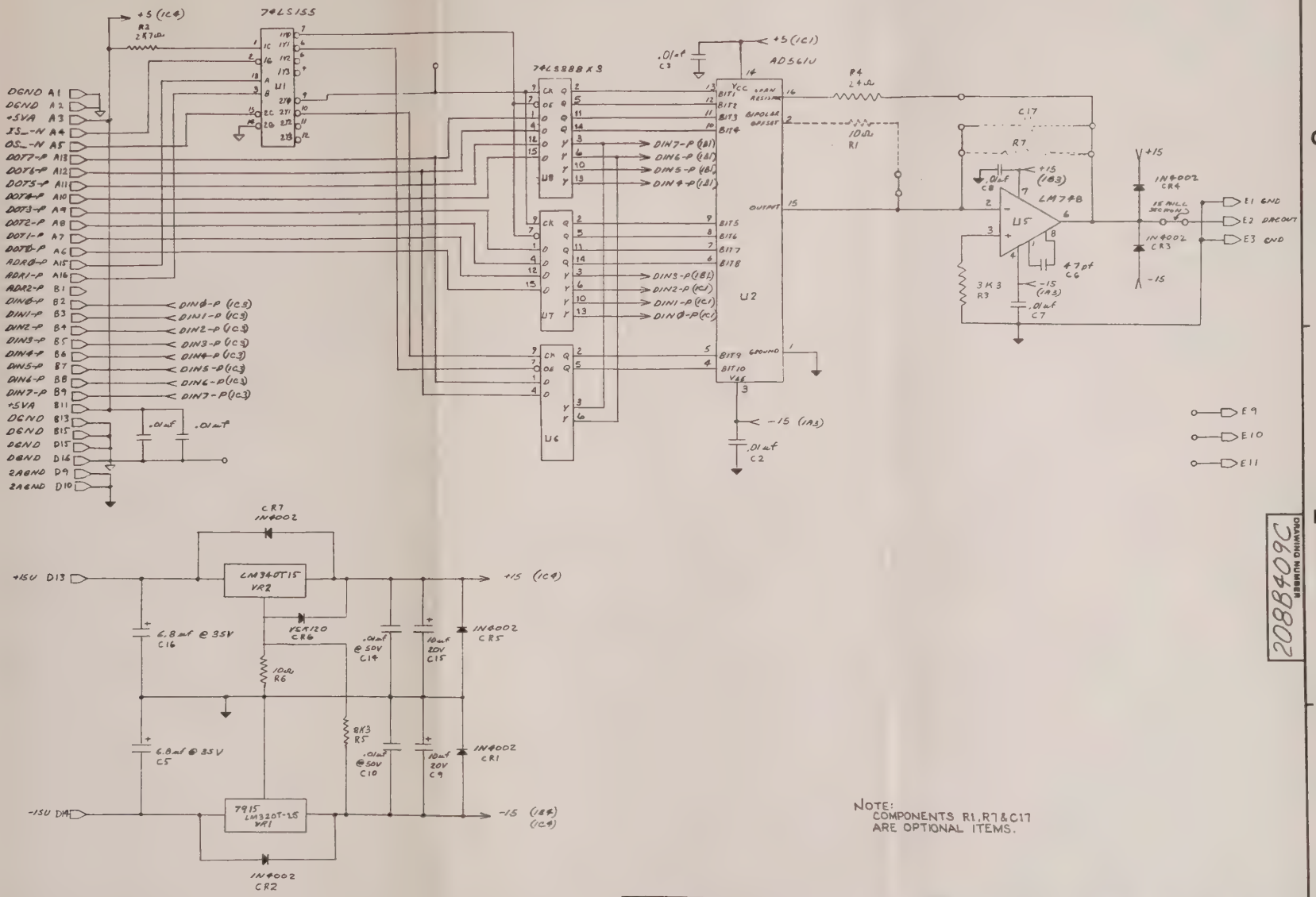
TITLE: DAC MODULE BOARD ASSEMBLY

PROJECT	3001			MATERIAL	~
DR BY	J. Dick	DATE	8-22-79	FINISH	~
CH BY	CPD 19/10/79	SCALE	~	DRAWING NUMBER	REV
DES BY	JRF	Q A		208A409B	A
ENG	CPD	MFG	USH 11-16-79	SHT 1 OF 1	SHTS



NOTE:
COMPONENTS R1, R7 & C17
ARE OPTIONAL ITEMS.

DRAWING NUMBER 2088409C

ECN NO	LETT	DATE	DESCRIPTION
1838	A	10-10-79	PER ECN CPD

USED ON: NI 3001 OPTION BOARD
TOL OTHER THAN NOTED: 2 PL DEC ±1 — WH ±1 — 3 PL DEC ±1 — WH ±1 — ANG ± ½° — FIN V — BREAK ALL SHARP CORNERS

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TITLE: DAC MODULE
PROJECT: 208
MATERIAL:
FINISH:
DR BY: U R F — DATE: 2-20-79
CH BY: — SCALE:
DES BY: U R F — Q A: MAD
ENG: CPD — MFG:
DRAWING NUMBER: 2088409C — REV: A
SHT 1 OF 1 SHTS

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

W.O.	QTY.
JOB #	DATE

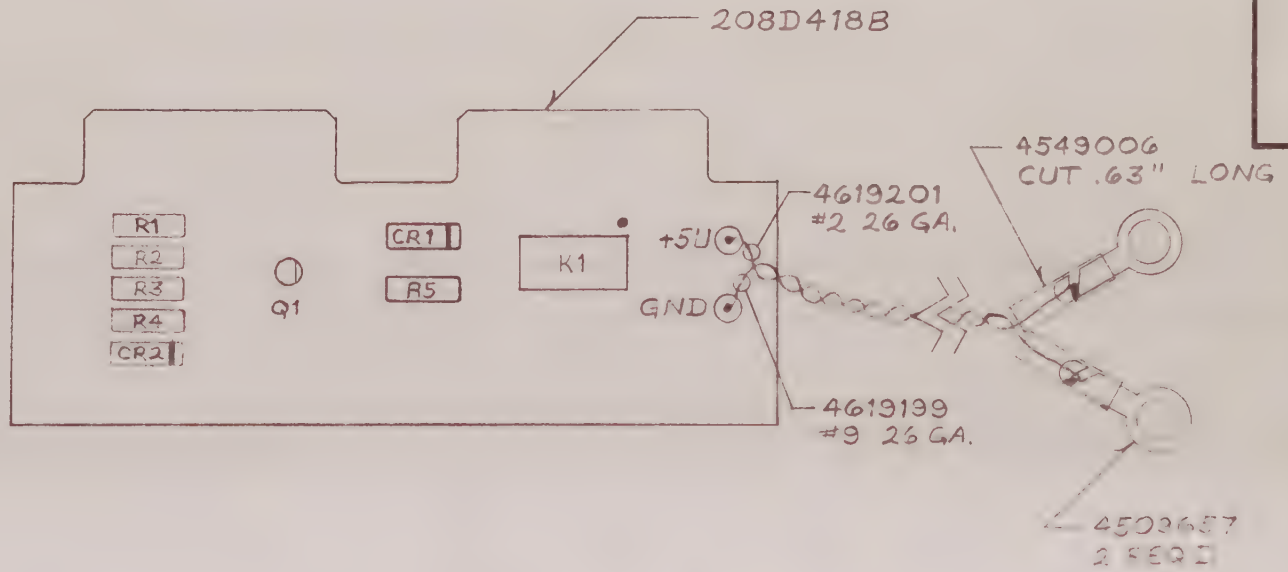
NUMBER 208A418A-C				SHT. 1 OF 1
DR. BY	DATE	Q.A.	DATE	
PROJ. ENG.	DATE	MFG.	DATE	

NAME: Serial Switch Board Assembly

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	208D418B-A	1	PC Board	
			(Use Drilling Detail 208D418D-)	
2	1002047	1	91 ohm 1/4 watt 5%	R5
3	1002074	3	1.2K 1/4 watt 5%	R1,R2,R3
4	1002086	1	3.9K 1/4 watt 5%	R4
5	1749000	2	1N914	CR1,CR2
6	3759004	1	2N5172	Q1
7	219055	1	Dip Relay	K1
8	4509657	2	Solder Lug	
9	4549006	.12'	1/8" Clear Heat Shrink Tubing	
10	4619199	.50'	#9 Wire 26 ga.	
11	4619201	.50'	#2 Wire 26 ga.	
12				
13				
14				
15				
16				
17				

ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE
1576	C	[illegible]	PER ECN 1576								

DRAWING NUMBER



NOTE:
1) STRIP ALL WIRE ENDS .250". TIN END OF WIRE WHICH CONNECTS TO BOARD
2) Q1 TO BE MOUNTED IN LOWER THREE HOLES OF THE FOUR THAT ARE PROVIDED ON THE BOARD.

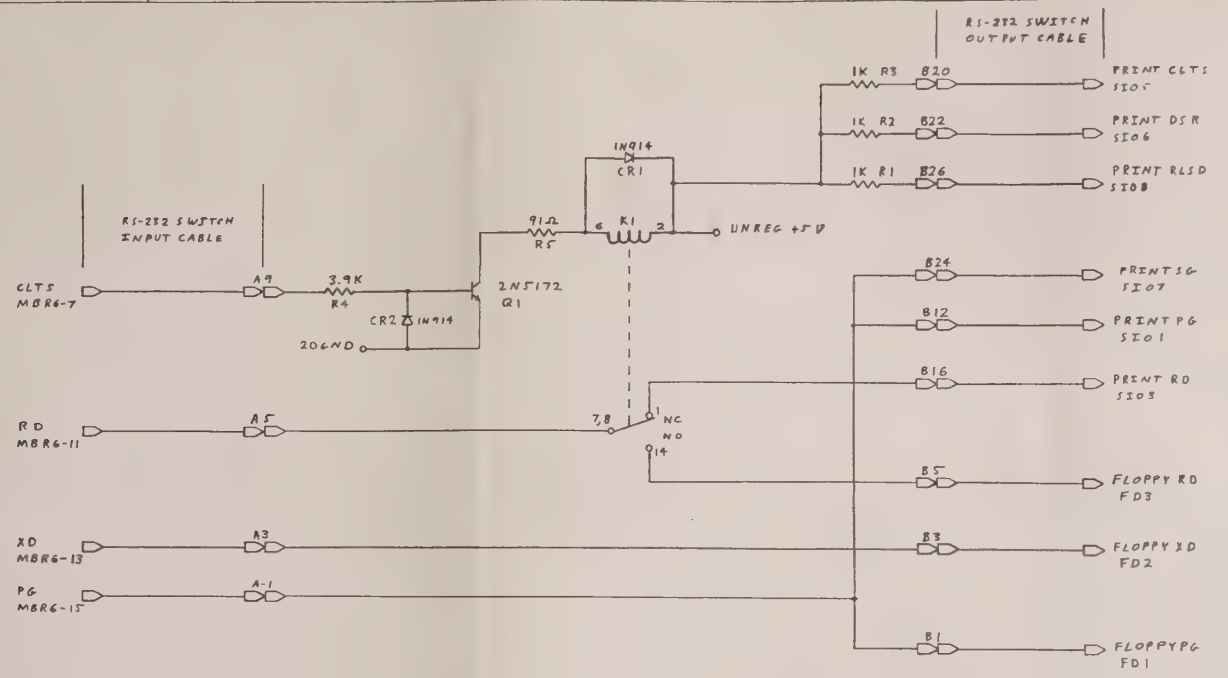
ECN. NO.	LETT.	DATE	DESCRIPTION
12-30-80	C	12-30-80	PER ECN CPD
1776	B	9-17-79	PER ECN CPD 11/8/79
T.R.D.	A	4-25-79	ARTWORK REVISED

TOL. OTHER THAN NOTED
2 PL. DEC ±(.10") MM. ±( )
3 PL DEC ±(.062") MM. ±( )
ANG ± ½°
FIN. √
BREAK ALL SHARP CORNERS

NORLAND INSTRUMENTS
A Subsidiary of Cordis Corporation

TITLE SERIAL SWITCH BOARD ASSEMBLY

PROJECT	3001			MATERIAL
DR BY	T.R.D.	DATE	4-3-79	FINISH
DES. BY	CT	SCALE	FULL	DRAWING NUMBER
CH. BY	MGJ	PROJ. MGR.	MGJ	208A418 C
PROJ. ENG.	CPD	PROD. MGR.	[illegible] 11-6-79	SHT. 1 OF 1 SHTS



DRAWING NUMBER

ECN		DATE	WAS
2576	C	12-30 80	PER ECN CPD
——	A	7/9/79	ADD R1,2,3 CHANGE CONNECTOR B

TOL. OTHER THAN NOTED: 2 PL. DEC. ± .008; 2 PL. DEC. ± .010; ANG. ± ½°; 63 √ FIN.; BREAK ALL SHARP CORNERS

TITLE: SERIAL SWITCH BOARD

MACHINE

MATL.

FINISH

DR. CPD

CH. CPD

PROD. APPVD. DGH 11/16/79

DATE RELSD.

SCALE NTS

DATE 4/25/79

DRAWING NUMBER 208B418C-C

SHT 1 OF 1 SHTS

NORLAND CORPORATION

NUMBER 301A001D-M PAGE 1 OF 5

TITLE 302' SONAR AVIONICS BOARD

INIT BY	ME	DATE	5-7-90	CH BY	JFF	DAT	1-9-90				
ENG	RF	DATE	1-8-90	QA	MES	DATE	1-4-90	MFG	DGH	DATE	1-4-90

REV	ECN NO	REVISION	BY	DATE	CHK'D	APP'D
A	1596	PER ECN	DLK	6-20-[illegible]		DGH
B	1951	PER ECN	DLK	12-13-[illegible]		JRF
C	1951	PER ECN	DLK	12-[illegible]		JRF
E	2492	PER ECN	PCP	10-10-[illegible]		[illegible]
F	2504	PER ECN	PCP	10-[illegible]		[illegible]
G	2774	PER ECN	JGD	11-[illegible]		[illegible]
H	3-13 [illegible]	[illegible]	[illegible]	3-17-[illegible]		[illegible]
I	3218 3248	PER ECN'S	JGD	6-25-[illegible]		[illegible]
J	3319	PER ECN	JGD	10-4-[illegible]		[illegible]
K	3438	PER ECN	JGD	3-21-83		
L	3582	PER ECN	JGD	11-2-83		
M	3832	PER ECN	L.E.	7-20-84		

NUMBER 301A001D-M

DS-032-1

W.O.	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 301A001D-A			SHT. 2 OF 3
DR. BY	DATE	Q.A.	DATE
JRF	5/14/79		
PROJ. ENG.	DATE	MFG.	DATE
JRF	11/3/80		

NAME: 3001 Signal Averager Board

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	301D001D-B	1	Multilayer PC Board	
2	1002080	1	2.2K 1/4 watt 5%	RD
3	1002096	2	10K 1/4 watt 5%	RB,RC
4	1002103	1	20K 1/4 watt 5%	RA
5	1069002	3	1K resistor pack	11U,88U,141U
6	1359021	73	.01 mfd	CRL,CRH,CRE,CPB,C1-C69
7	1409301	9	10 mfd @ 20V	CRK,CRM,CRG,CRJ,CRD,CRF,CRA,CRC,CTA
8	1509001	1	200 mfd @ 25V	CRN
9	1749000	1	1N914 Diode	DA
10	2529011	1	74S02	24U
11	2529014	1	74S04	104U
12	2529015	3	74LS04	44U,90U,139U
13	2529019	2	74LS08	130U,134U
14	2529022	1	74S10	22U
15	2529024	1	74LS10	85U
16	2529048	2	74S112	30U,125U
17	2529051	1	74120	82U

ECN	REV.	DATE	CHANGE
1596	A	6/28/79	PER ECN DAN
1951	B	12/13/79	Per ECN JRF 11/3/80
1952	C	12/13/79	Per ECN JRF 11/3/80
2492	E	10-10-80	PER ECN (T... COORDINATE ECN LEV...

ECN	REV.	DATE	CHANGE
2554	F	11-22-80	PER E'N

ECN	REV.	DATE	CHANGE

W.O. #	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 301A001D-M			SHT. 2 OF
DR. BY	DATE	Q.A.	DATE
[illegible]	[illegible]	[illegible]	[illegible]
PROJ. ENG.	DATE	MFG.	DATE
J R F	[illegible]	[illegible]	[illegible]

NAME: 3001 Signal Averager Board

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529055	1	74S133	67U
2	2529057	2	74S138	3U,9U
3	2529058	1	74S139	25U
4	2529059	1	74S140	124U
5	2529095	11	8243	13U,20U,33U,40U,73U,80U,100U,117U-120U
6	2529102	1	74S08	46U
7	2529103	3	74S163	2U,10U,26U
8	2529112	1	74LS153	23U
9	2529115	2	74LS174	95U,113U
10	2529116	7	74LS175	52U,64U,72U,96U,99U,111U,112U
11	2529122	2	74LS138	48U,49U
12	2529123	4	74LS00	21U,27U,31U,66U
13	2529124	1	74LS02	45U
14	2529126	5	74LS14	89U,106U,107U,108U,109U
15	2529128	1	74LS27	43U
16	2529130	4	74LS32	4U,8U,103U,131U
17	2529132	4	74LS74	61U,62U,63U,65U

ECN	REV	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE

W.O	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER	301A001D-	SHT. 4 OF 5	
DR. BY	DATE	Q.A.	DATE
JRF	12/29		
PROJ. ENG.	DATE	MFG.	DATE
JRF	1/3/80		

NAME: 3001 Signal Averager Board

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529135	1	74LS136	69U
2	2529136	3	74LS148	12U,32U,105U
3	2529142	5	74LS181	14U,34U,74U,94U,114U
4	2529143	2	74LS164	28U,29U
5	2529144	3	74LS163	115U,116U,135U
6	2529145	1	74LS85	51U
7	2529250	2	74279	86U,87U
8	2529148	1	74LS21	68U
9	2529155	1	74LS38	143U
10	2529158	2	74LS151	5U,7U
11	2529169	1	74LS155	47U
12	2529171	3	74LS240	127U,128U,129U
13	2529172	10	74LS244	83U,84U,91U,121U,126U,132U,133U,136U,137U,138U
14	2529174	3	74LS388	70U,110U,140U
15	2529176	1	74S32	6U
16	2529178	1	74S74	42U
17	2529220	1	74LS123	81U

ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

W.O. #	QTY.
JOB #	DATE

ISSUE DATE:

NUMBER 3001A001D-M			SHT. 5 OF 5
DR. BY	DATE	Q.A.	DATE
JMB	3/7/80		
PROJ. ENG.	DATE	MFG.	DATE
J R F	1/3/80		

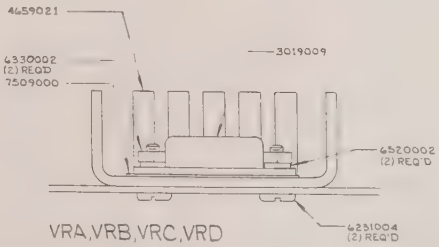
NAME: 3001 Signal Averager Board

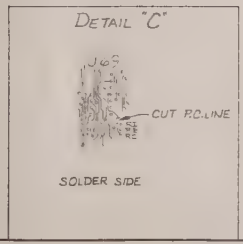
ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529223	4	74LS273	92U,93U,97U,98U
2	2529229	1	74LS86	71U
3	2529242	1	74LS33	41U
4	2629006	20	4044-30 or TI TMS 4044-45 or EMM L4044-UCB or National MM5257L	15U-19U,35U-39U,55U-59U,75U-79U
5	3019009	4	LM140K	VRA,VRB,VRC,VRD
6	3509020	12	24 Pin Socket	10IU, [illegible]
7	3509013	20	18 Pin Socket	15U-19U,35U-39U,55U-59U,75U-79U
8	4659021 or 4659024	4	Heat Sink	VRA,VRB,VRC,VRD
9	6231004	8	#6 x 6 PHMS	VRA,VRB,VRC,VRD
10	6330002	8	#6 Small Pattern Hex Nuts	VRA,VRB,VRC,VRD
11	6520002	8	#6 Lock Washers	VRA,VRB,VRC,VRD
12	7509000	A/R	Thermal Compound	VRA,VRB,VRC,VRD
13	7700103	2	Card Ejector w/pins	
14	[illegible]	3	Terminal Posts	TP1, TP2, TP3
15	[illegible]	1	150 ohm, 1/4 Watt, 5% Resistor	
16	[illegible]	1	47K, [illegible] Ohms Resistor	
17	1022470	1	820 ohm, 1/4 watt, 5% Resistor	

ECN	REV	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE

AT THE END OF EACH KLUDGE WIRE ARE REFERENCE NUMBERS WHICH CORRESPOND TO THE NUMBERED KLUDGES BELOW.
1.) J69 PIN 19 TO RC AS SHOWN.

NOTE
AN ASTERISK (*) REPRESENTS THOSE I.C.'S THAT REQUIRE A SOCKET.
REFER TO PARTS LIST FOR CORRECT SOCKET NUMBER.
2.) BEND PIN 12 OF U108 180° SO THAT IT EXTENDS ABOVE THE I.C. BEFORE WAVE SOLDERING. AFTER WAVE SOLDER, INSERT ONE LEG OF A 180 ohm RESISTOR THRU U108 PIN 12 FEED THRU SO THAT RESISTOR BODY LIES FLAT AGAINST BOARD AS CLOSE TO I.C. AS POSSIBLE. BEND OTHER LEG OF RESISTOR BACK OVER BODY OF RESISTOR TO U108 PIN 12 AND SOLDER.
3.) ASSEMBLE A 470pf CAPACITOR (1359041) FROM C26 TO FEED THRU GOING TO U48 PIN 1 BY INSERTING ONE LEG OF THE CAP INTO THE FEED THRU AND SOLDERING THE OTHER LEG TO THE FAR THEST LEG OF C24 AS SHOWN.
4.) INSTALL AN 820 OHM RESISTOR (1002070) FROM PIN 10 OF U127 TO PIN 11 U127.





3832	M	7-20-79	PER ECN	0574	A	11-2-80	PER ECN
3580	L	11-26-79	PER ECN	2504	A	2-22-80	PER ECN
3488	K	8-6-79	PER ECN	2496	A	3-6-80	PER ECN
DCN 1	J	11-17-79	PER ECN	65	A	5-7-80	PER ECN
3519	H	2-4-80	PER ECN	1952	A	7-3-80	PER ECN
3526	G	2-19-80	PER ECN	1819	B	1-3-80	PER ECN
3526	F	2-19-80	PER ECN	1951	A	1-3-80	PER ECN
	E	10-2-79	PER ECN				

USED ON

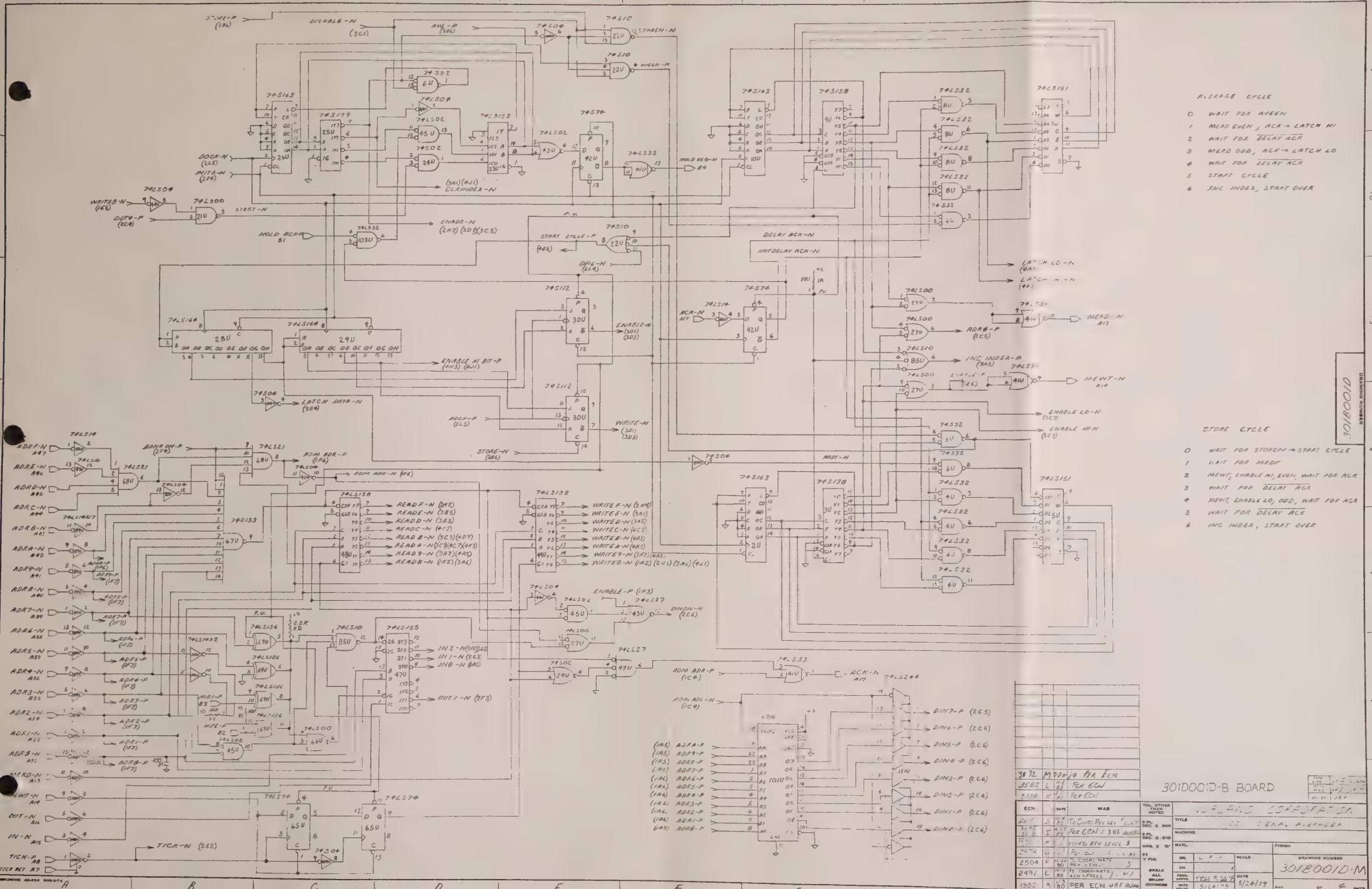
NORLAND CORPORATION — A SUBSIDIARY OF CORDIS CORPORATION

SIGNAL AVERAGER BOARD ASSEMBLY

PROJECT	3501
DR BY	J. DICK
DATE	5 4 79
CH BY	V R F
SCALE	
REL BY	V R F
QA	
ENG	J R F
MFG	

DRAWING NUMBER: 301A001C

SHEET 1 OF 1


AVERAGE CYCLE
0 WAIT FOR AVEEN
1 MEAD EVEN, ACK → LATCH HI
2 WAIT FOR DELAY ACK
3 MEAD ODD, ACK → LATCH LO
4 WAIT FOR DELAY ACK
5 START CYCLE
6 INC INDEX, START OVER
STORE CYCLE
0 WAIT FOR STOREN → START CYCLE
1 WAIT FOR MADI
2 MEWT, ENABLE HI, EVEN, WAIT FOR ACK
3 WAIT FOR DELAY ACK
4 MEWT, ENABLE LO, ODD, WAIT FOR ACK
5 WAIT FOR DELAY ACK
6 INC INDEX, START OVER
DISABLE-N
AVE-P
AVEEN-N
STOREN-N
DOCA-N
MITA-N
CLKINDEX-N
WRITEB-N
DOTA-P
START-N
HOLD ACK-N
ENADR-N
START CYCLE-P
DPC-N
DELAY ACK-N
NOTDELAY ACK-N
HOLD REG-N
ACK-N
ADDR0-P
INC INDEX-P
ENABLE-P
ENABLE LO-N
ENABLE HI-N
MEAD-N
MEWT-N
ENABLE HI BIT-P
LATCH DATA-N
DOCA-P
WRITE-N
STORE-N
MADI-N
ROM ADR-P
ROM ADR-N
ENABLE-N
DINGN-N
ACK-N
DIN7-P
DIN6-P
DIN5-P
DIN4-P
DIN3-P
DIN2-P
DIN1-P
DIN0-P
ADRF-N
ADRE-N
ADRD-N
ADRC-N
ADRB-N
ADRA-N
ADR9-N
ADR8-N
ADR7-N
ADR6-N
ADR5-N
ADR4-N
ADR3-N
ADR2-N
ADR1-N
ADR0-N
MEWT-N
OUT-N
IN-N
TICK-P
TICK-N
READF-N
READE-N
READD-N
READC-N
READB-N
READA-N
READ9-N
READ8-N
WRITEF-N
WRITEE-N
WRITED-N
WRITEC-N
WRITEB-N
WRITEA-N
WRITE9-N
WRITE8-N
IN2-N
IN1-N
IN0-N
OUT1-N
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74LS10
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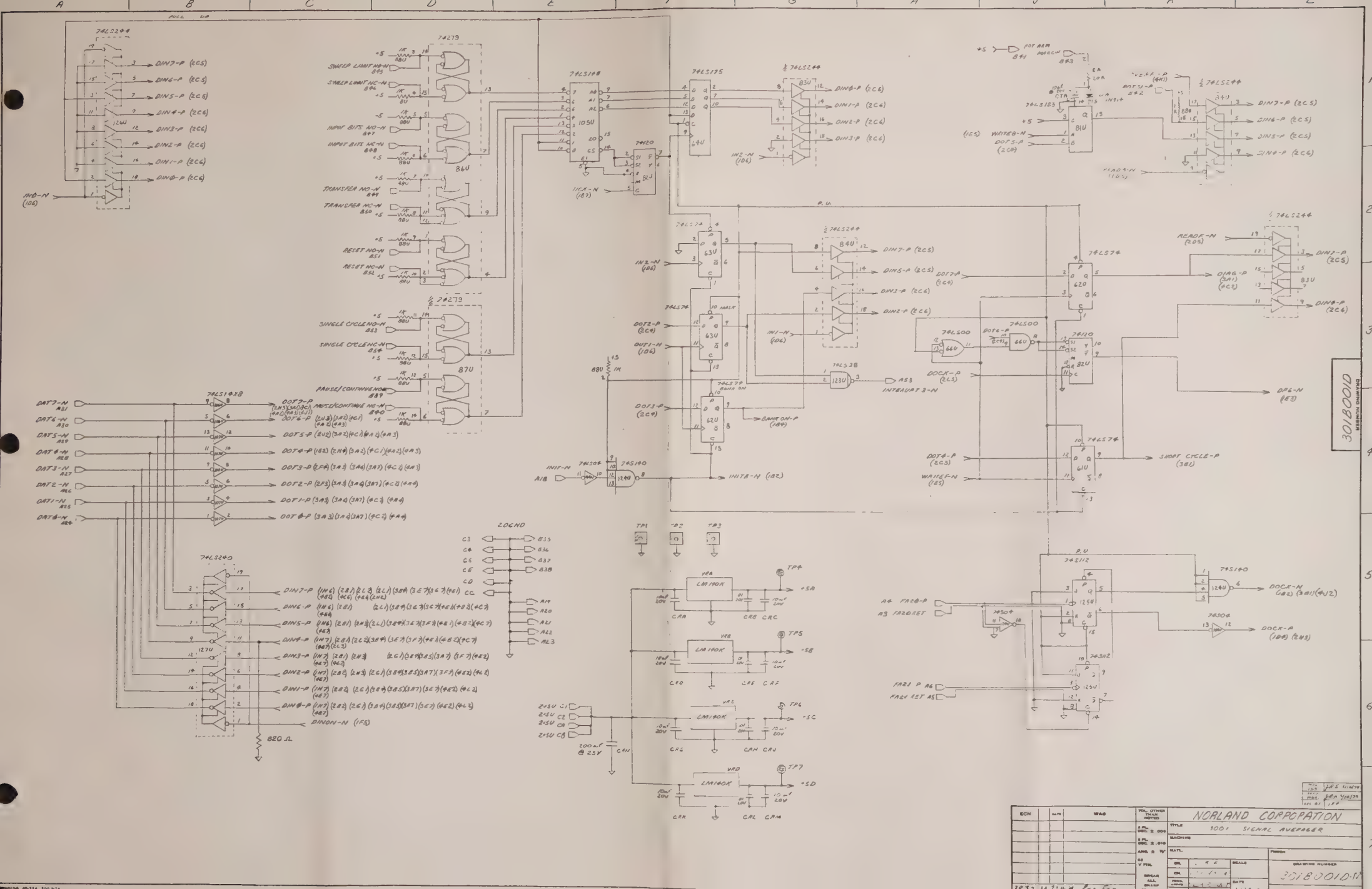
74LS14
74LS21
74LS133
74LS147
74LS136
74LS155
74LS27
74LS244
74LS373
74LS86
74LS14X2
301D001D-B BOARD
301800ID-M
DRAWING NUMBER
SCALE
DATE
TITLE
MACHINE
MATL.
FINISH
ECN
WAS
TOL. OTHER THAN NOTED
BREAK ALL SHARP CORNERS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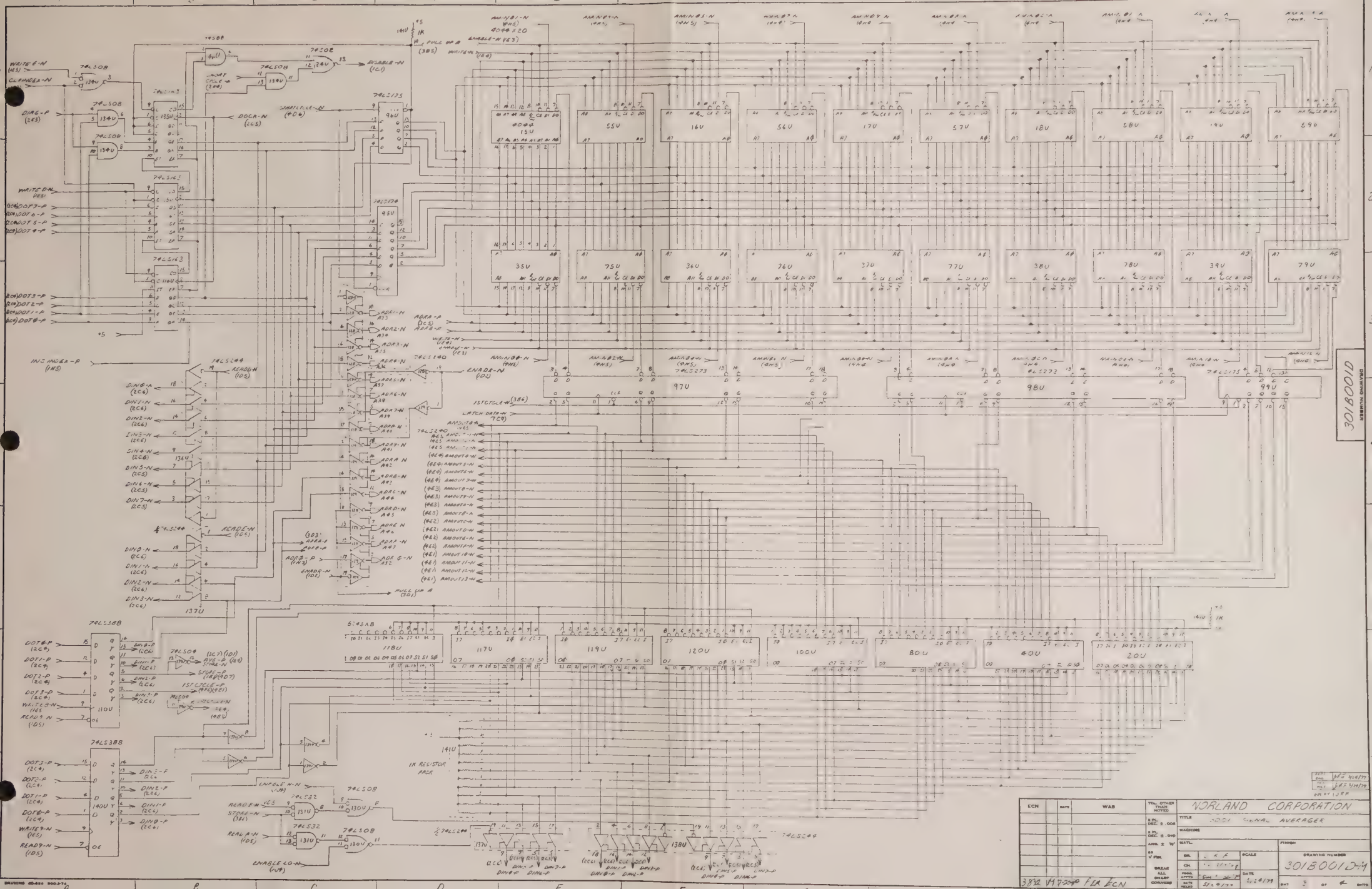
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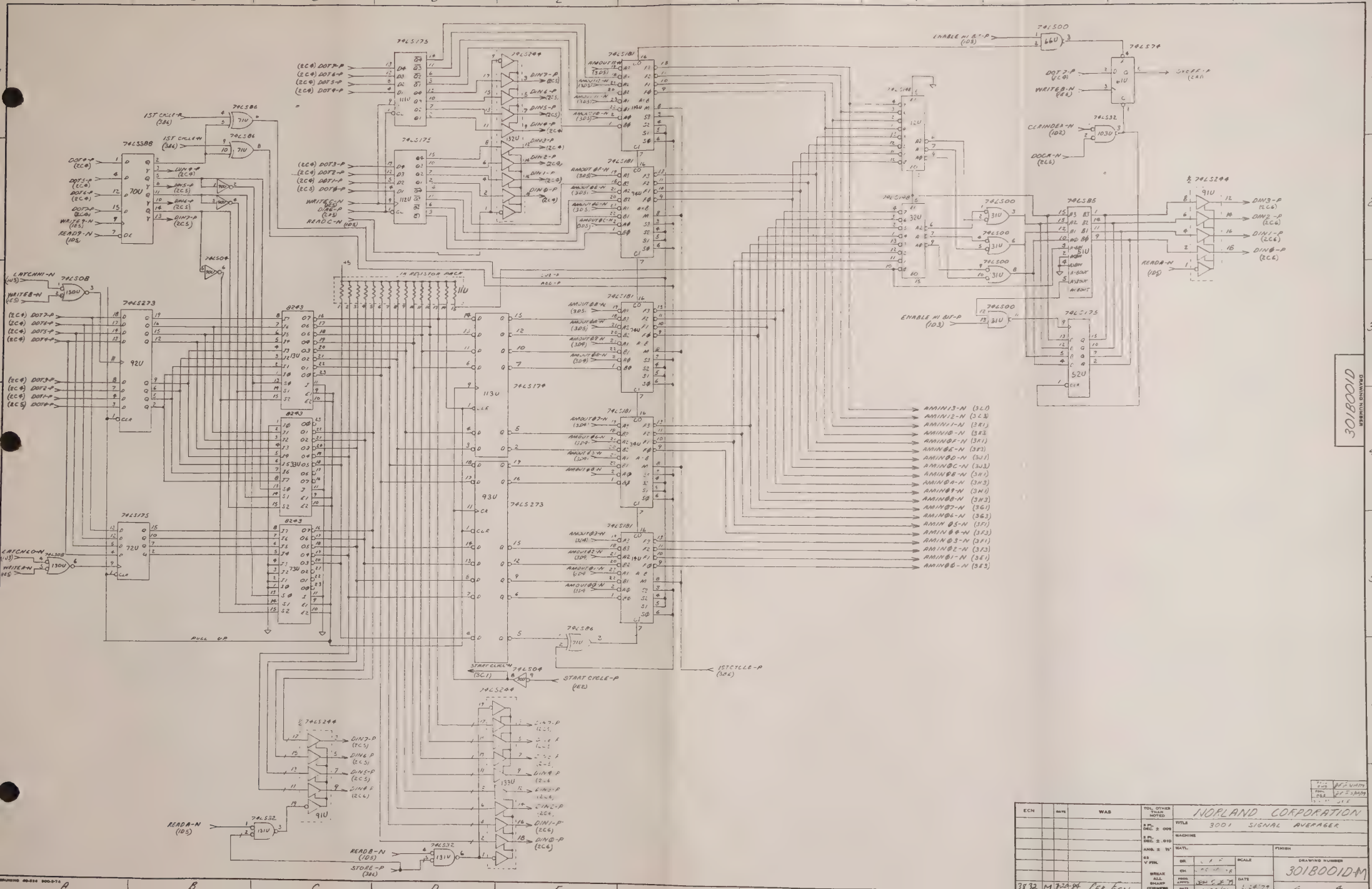
4044 A20
4009 15U
55U
16U
56U
17U
57U
18U
58U
19U
59U
35U
75U
36U
76U
37U
77U
38U
78U
39U
79U
97U
98U
99U
118U
117U
119U
120U
100U
80U
40U
20U
137U
138U
141U
110U
140U
131U
130U
1K RESISTOR PACK
WRITE-N (WE)
CLEAR-N
DIAG-P (2E3)
DISABLE-N (1C1)
WRITE-N (WE)
DOCA-N (2C5)
WRITE-N (WE)
READ-N (OE)
ENABLE-N (WE3)
ENABLE-N (WE)
ENABLE-N (OE)
ENABLE-N (OE)
ENABLE-N (O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74LS32
8243
92U
93U
91U
113U
133U
DOT0-P (2C6)
DOT1-P (2C5)
DOT2-P (2C4)
DOT3-P (2C3)
DOT4-P (2C9)
DOT5-P (2C8)
DOT6-P (2C7)
DOT7-P (2C6)
DINT-P (2C5)
DIN6-P (2C5)
DIN5-P (2C5)
DIN4-P (2C4)
DIN3-P (2C4)
DIN2-P (2C9)
DIN1-P (2C8)
DIN0-P (2C9)
READA-N (10B)
READB-N (10B)
READC-N (10A)
WRITEB-N (2E8)
STORE-P (3B6)
START CYCLE-P (2E2)
ENABLE M BIT-P (10B)
CLRINDER-N (10Z)
DOCA-N (2C6)
DOT7-P (2C9)
WRITEB-N (2E8)
DAM3-P (2C6)
DAM2-P (2C6)
DIN1-P (2C6)
DIN0-P (2C6)
AMIN13-N (3L1)
AMIN12-N (3L3)
AMIN11-N (3K1)
AMIN10-N (3K3)
AMIN0F-N (3J1)
AMIN0E-N (3J3)
AMIN0D-N (3H1)
AMIN0C-N (3H3)
AMIN0B-N (3G1)
AMIN0A-N (3G3)
AMIN09-N (3F1)
AMIN08-N (3F3)
AMIN07-N (3E1)
AMIN06-N (3E3)
AMIN05-N (3D1)
AMIN04-N (3D3)
AMIN03-N (3C1)
AMIN02-N (3C3)
AMIN01-N (3B1)
AMIN00-N (3B3)
IA REGISTER PACK
PULL U.P
3018001D
DRAWING NUMBER

NORLAND CORPORATION

NUMBER 302A001D- AA PAGE 1 OF 8

TITLE [illegible]

INIT BY	[illegible]	DATE	[illegible]	CH BY	[illegible]	DATE	[illegible]				
ENG	[illegible]	DATE	[illegible]	QA	[illegible]	DATE	[illegible]	MFG	[illegible]	DATE	[illegible]

REV	ECN NO	REVISION	BY	DATE	CHK'D	APP'D
T	[illegible]	[illegible]	[illegible]	[illegible]		
U	[illegible]93	[illegible]	[illegible]	[illegible]		[illegible]
V	3201	PER ECN	JGD	6-11-82		[illegible]
W	3285 3283 3300 3317	PER ECN's	JGD	8-24-82		D.D.
X	3471	PER ECN	JGD	5-24-82		
Y	3556	PER ECN	JGD	9-21-83		
Z	3611	PER ECN	DEM	[illegible]		
AA	3963	TO COORD REV LEV	TKW	2-1-85		

NUMBER 302A001D- AA

DS-032-1

W.O.	QTY
JO #	DATE

PARTS LIST

NORLAND CORPORATION

NUMBER 302A001D- A SHT. 2 OF 2

ENG'G	DATE	Q.A.	DATE
JMD	10/11/79	MP	11-9
PROD'N	DATE	MFG	DATE
EG	11-14-79	DH	11-12-79

NAME: Converter Board Assembly (3226B Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	208D009D	1	PC Board Rev.E (Use Drilling Detail 208D009D-K) (Use Assembly Drawing 302A001D-V)	
2	208D188B	2	Relay Drive Prom (27S19)	U6,U20
3	1002024	3	10 ohm 1/4 watt 5% Carbon Resistor	R51,R53,R55
4	1002041	2	51 ohm 1/4 watt 5% Carbon Resistor	R23,R37
5	1002065	2	510 ohm 1/4 watt 5% Carbon Resistor	R15,R16
6	1002068	2	680 ohm 1/4 watt 5% Carbon Resistor	R54,R56
7	1002072	10	1K 1/4 watt 5% Carbon Resistor	R1-R4,R6,R10-R12,R21,R22
8	315A028A	2	CONVERTER COAX CABLE	
9	1002084	1	3.3K 1/4 watt 5% Carbon Resistor	R52
10	1002089	1	5.1K 1/4 watt 5% Carbon Resistor	R20
11	1002096 or 1007096	1	10K 1/4 watt 5% Carbon Resistor	R13
12	1002103	1	20K 1/4 watt 5% Carbon Resistor	R14
13	1002104	2	22K 1/4 watt 5% Carbon Resistor	R7,R9
14	1002107	1	30K 1/4 watt 5% Carbon Resistor	R5
15	1002115	1	62K 1/4 watt 5% Carbon Resistor	R8
16	1002265	2	510 ohm 1/2 watt 5% Carbon Resistor	R26,R39
17	4629000	3	Kantscuf Vinyl Plastic .035" Dia	

ECN	REV	DATE	CHANGE
2492	P	10-10-80	PER ECN CPD
2533	R	11-12-80	PER ECN MCP
2573	R	1-23-80	PER ECN CPE
2614	S	3-12-81	PER ECN CPD

ECN	REV	DATE	CHANGE

ECN	REV	DATE	CHANGE

W.O. #	QTY.
JOB #	DATE

PART LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 302A001D- AA			SHT. 2 OF 2
DR BY	DATE	Q A	DATE
JWB	10/4/79		
PROJ ENG	DATE	MFG	DATE
TFS	10/4/79		11-2-79

NAME Converter Board Assembly (3226B Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	1023169	2	576 ohm 1/4 watt 1% Film 100 PPM	R30,R44
2	1079005	1	2.2K Dip Pac 2% Dale LDP14-02	U61
3	1079006	1	6.8K Dip Pac 2% Dale LDP14-02	U13
4	1079007 or	1	510 ohm Dip Pac Dale 14-02 or equiv.	U73
	1079008	1	560 ohm	
5	1029122	2	1K 1/4 watt 1% Film 100 PPM	
6				
7				
8				
9				
10				
11				
12	1249002	1	Pot, Cermet, 18T 200K	R13
13	1359021	40	.01 mfd @ 50V 10% Ceramic Disc Centralab UK50-103	C9-C36,C38,C40,C41,C43 ,C50 ,C55,C57 C60,C61,C65,C68,C48
14	1359028	1	22 pf Ceramic Cap. 10%	C8
15	1359035	2	10 pf @ 600V 5% Centralab DTZ-10,NPO	C5,C6
16	1359036	2	47 pf @ 600V 5% Centralab DTZ-47,NPO	C46,C53
17	1359041	2	470 pf @ 1000V 10% Ceramic Disc Centralab DD471	C3,C4

ECN	INIT	DATE	CHANGE	ECN	INIT	DATE	CHANGE	ECN	INIT	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE

NUMBER 302A001D

Converter Board Assembly (3226B Teledyne 4853/Teledyne)

		QTY	DESCRIPTION	
	1409301	17	10 mfd @ 20V 10% Solid Tantalum Kemet T368B106K020AS	C7,C37,C39,C42,C44,C49,C51,C56,C58,C59, C62-C64,C66,C67,C69,C72
	[illegible]	2	[illegible] Monolithic	C1,C2
	1409316	2	6.8 mfd @ 35V 10% Solid Tantalum Kemet T368B685K035AS	C70,C71
	1709005 or 1709052	4	1N756A 8.2V Zener	CR30,CR31
	1729000	17	1N4002 Diode	CR3-CR7,CR10-CR12,CR14,CR15,CR17,CR18,CR2 CR29
	1749000	2	1N914 Diode	CR1,CR2
	1749005	3	VSK120 Diode	CR13,CR16,CR20
	2489010	2	4131-30 Teledyne 10 Bit	A5,A6
	2489016	2	4853 Sample & Hold Teledyne	A3,A4
	2529014	1	74S04	U14
	2529015	5	74LS04	U1,U8,U28,U35,U45
	2529017	1	74LS05	U9
	2529019	1	74LS08	U37
	2529022	1	74S10	U27
	2529048	5	74S112	U15,U17,U26,U30,U43

WO #	QTY
JOB #	DATE

PART LIST

NORLAND CORPORATION

ISSUE DATE

NUMBER 302A001D-			SHT 2 OF 2
DR BY	DATE	Q A	DATE
JMB	10/1/79		
PROJ ENG.	DATE	MFG	DATE
			11-13-79

NAME Converter Board Assembly (3226B Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529051	1	74120	U16
2	2529065	2	74154	U48,U50
3	2529102	1	74S08	U25
4	2529113	1	7407	U34
5	2529115	4	74LS174	U51,U52,U53,U54
6	2529123	1	74LS00	U23
7	2529124	1	74LS02	U2
8	2529127	1	74LS20	U42
9	2529132	1	74LS107	U24
10	2529135	1	74LS136	U58
11	2529140	1	74LS367	U11
12	2529143	2	74LS164	U40,U41
13	2529150	1	74LS03	U36
14	2529171	6	74LS240	U62-U67
15	2529172	2	74LS244	U59,U60
16	2529174	4	74LS388	U18,U19,U46,U47
	2529175	1	74S22	U55

NO.	REV.	DATE	CHANGE	ECN	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NO.	QTY.
JOB #	DATE

NUMBER 302A001D- A4 SHT 6

DR. BY	DATE	CK'D	DATE
JMB	10/11/89		
PROJ. ENG.	DATE	MFG.	DATE

NAME: Converter Board Assembly (32-6B Teledyne 4853/Teledyne)

ITEM NO.	PART NUMBER	QTY.	DESCRIPTION	
1	2529183	1	74LS375	U33
2	2529184	2	74S175	U38,U39
3	2529188	1	74S86	U68
4	2529189	1	74LS147	U12
5	2529190	2	74LS221	U21,U22
6	2529191	2	26S02	U56,U69
7				
8	2649002	3	10124 Motorola	U70,U72,U74
9	2649003	3	10125 Motorola	U44,U57,U71
10	2649007	3	ULN2003AJ TI or Sprague	U5,U7,U10
11	3009209	2	CA3100T Op Amp	U75,U77
12				
13	3019005	1	LM340T-5.0 +5V Regulator	VR3
14	3019009	1	LM140T-5.0 +5V Regulator	VR4
15	3019010	1	LM340T-15 +15V Regulator	VR1
16	3019011	2	LM320T-5.2 -5.2V Regulator	VR5,VR6
17	3019012	1	LM320T-15 -15V Regulator	VR2

ITEM NO.	QTY.	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE

W.O.#	QTY.
JOB #:	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 302A001D- AA	SHT 1 OF 1

DR BY	DATE	CK A	DATE
JMB	10/14/82	[illegible]	[illegible]
PROJ ENG	DATE	MFG	DATE
[illegible]	[illegible]	[illegible]	[illegible]

NAME: Converter Board Assembly (3226B Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1				
2	3509018	2	16 pin IC socket	U6,U20
3	4219001	2	RELAY	AK10,BK10
4				
5	4501101	5	Terminal Post, Cambion 1245-2	TP1-TP5
6	4509850	76	Feed Thru Terminal	
7	4549006	.10'	Clear Heat Shrink 1/8" dia.	
8	4569000	1	Buss Bar	
9	4619017	1.75'	30 ga. wire (slate grey)	
10	4659021 or	3	Heat Sink I.E.R.C. UP2-420-CB TO-220	H1,H2,H3
	4659023	3	Heat Sink Thermalloy 6081B-TO-220	
11	4659021 or	1	Heat Sink	H4
	4659024			
12				
13	6259077	8	#6-32 Pem Stud	
14				
15	6339002	8	#6-32 Hex Nut	
16				
17	6481002	8	#6 Lockwasher	

ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE

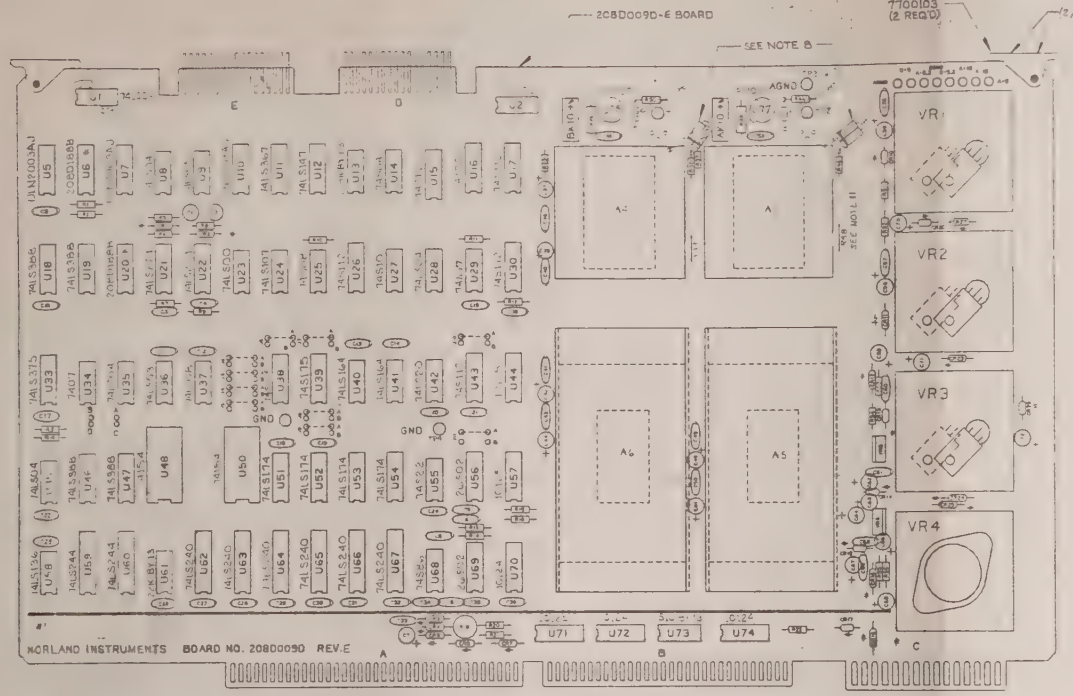
NUMBER	302A001D-		SHT
DR BY	DATE	CK'D	APP'D
JNB	10/11/77		
PROJ ENG	DATE	MFG	DATE
		QA	11-3-77

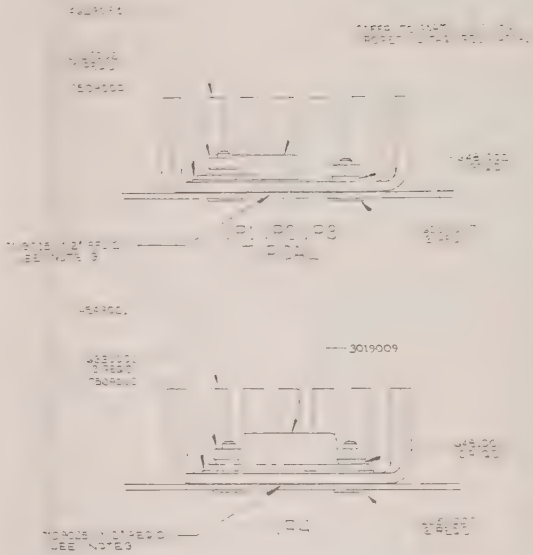
W.O. #	QTY
P.O.#	DATE

NAME Converter Board Assembly (3226B Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY	DESCRIPTION	
1	13008	3	Red Color Dot	
2	7700103	2	Card Ejectors w/pins S-203	
3	1379030	2	150 pf Silver Mica	C73,C74
4	[illegible]	1	74107	U29
5	1359008	1	.001 mfd ceramic cap	
6	7703083	.18'	Polyester Tape (1/2" w.)	
7	[illegible]	1	White Color Dot	

ITEM #	DATE	CHANGE	ECN	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE





ASSEMBLY

ALTERNATE SOURCE ASSEMBLIES. UNUSED COMPONENT DESIGNATIONS.	
302A001D TELEDYNE 4853, TELEDYNE	302A014D TELEDYNE 4855, TELEDYNE
R32	
R46	

NOTES:

1. THIS ASSEMBLY DESIGNATED TO BE USED WHEN ASSEMBLING P.C. BOARD
2. USE PAGE 4 OF S.O.P. WHEN ASSEMBLING THIS BOARD.
3. USE PAGE 4 OF S.O.P. WHEN ASSEMBLING THIS BOARD.
4. (*) DESIGNATES THE [illegible]
5. AS APPROPRIATE [illegible]
6. THE BOARD SHOULD BE CLEANED BEFORE THE HEAT SINKS ARE PUT ON ONCE THE THERMAL COMPOUND IS APPLIED, THE BOARD SHOULD NOT BE PUT IN THE DEGREASER.
7. PUT THE SAMPLE & HOLDS AND THE A-TO-D CONVERTER ON LAST
8. TWIST ANODE LEADS OF 1N756 ZENER DIODES(N.I.#1709005) TOGETHER AND INSULATE WITH 4549008(3/4" DIA.)CLEAR HEAT SHRINK. LOCATE IN HOLES MARKED CR30 & CR31. INSTALL WHEN ASSEMBLING BOTH VERSIONS OF THE 2.5 SEC SPEEDS.
9. ADD POLYESTER TAPE [illegible] TO INSULATE THE EXTRA REGULATOR HOLES [illegible] THE HEAT SINKS.
10. [illegible] OF THE P.C. BOARD, SOLDER SIDE.
11. USE A .75" PC. OF 4619017 IN COMPONENT DESIGNATION R34 & COMPONENT DESIGNATION R48. (30 GA GREY WIRE)

3471	X	5-24-83	Per ECN		
3201	V	6-1-82	Per ECN		
1293	U	1-19-82	PER ECA		
3008	T	3-15-82	Per ECN		
2492	B	[illegible]	PER ECN		
2004	H	11-7-80	Per ECN		

NORLAND INSTRUMENTS
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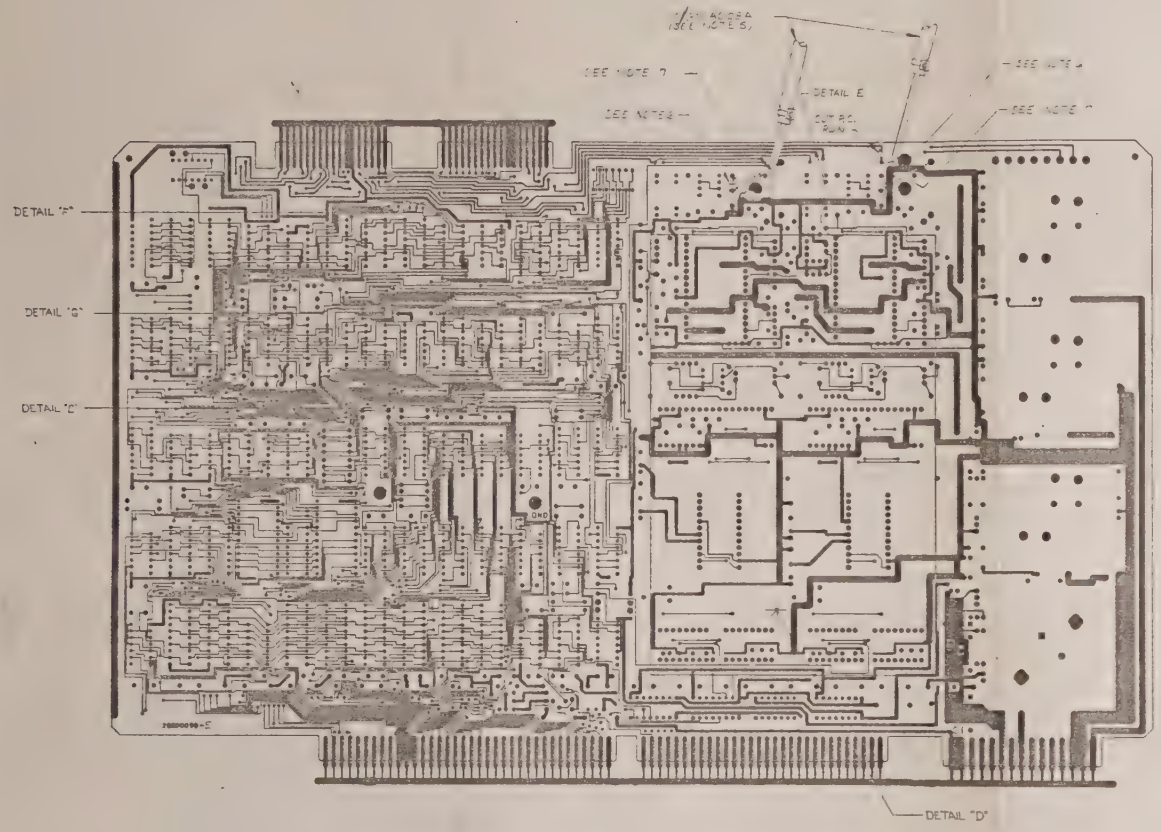
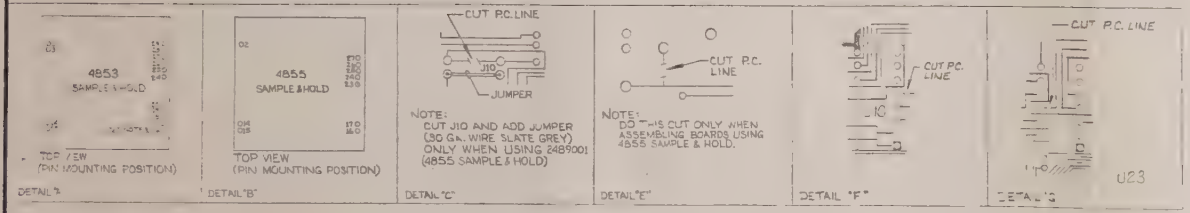
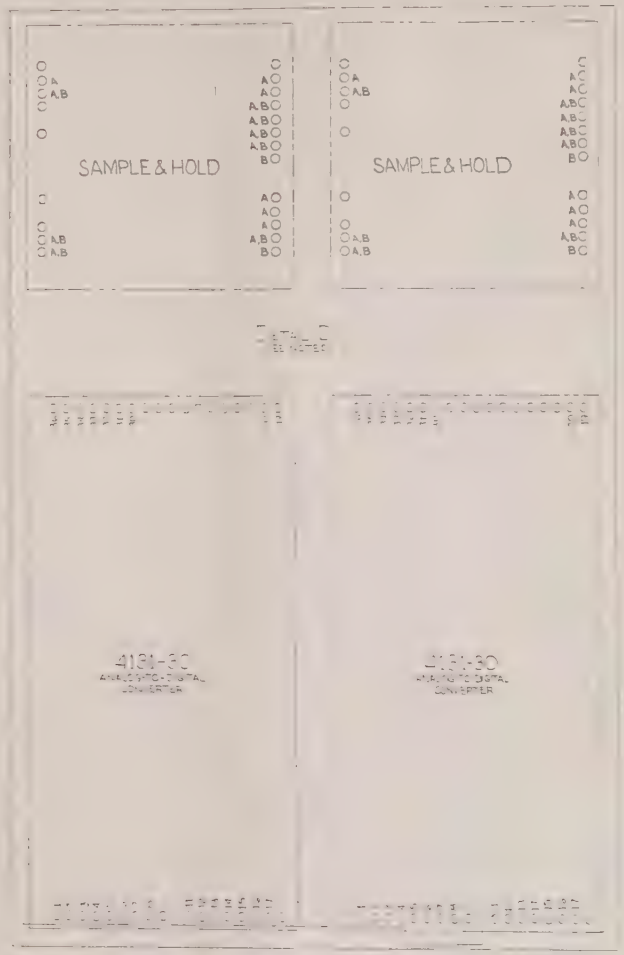


COMPONENT SIDE





NOTES

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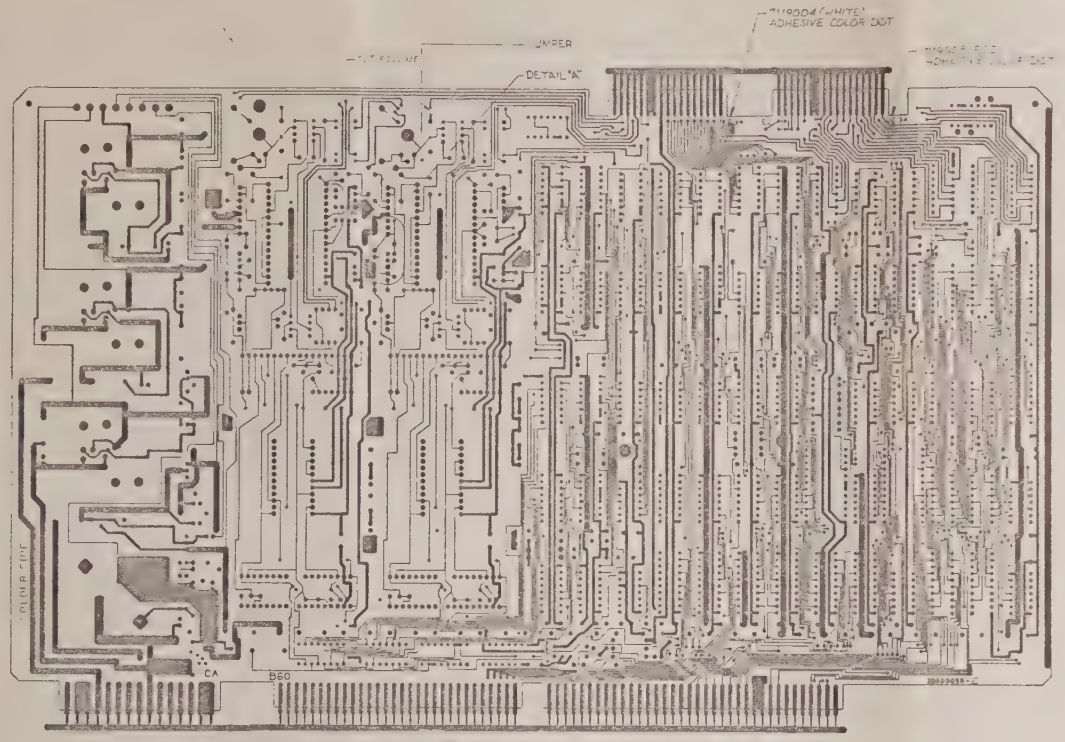
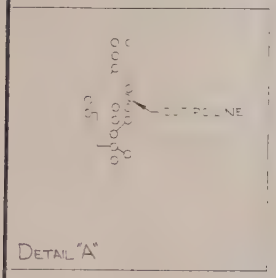


SOLDER SIDE



DETAIL "A"

NOTES:

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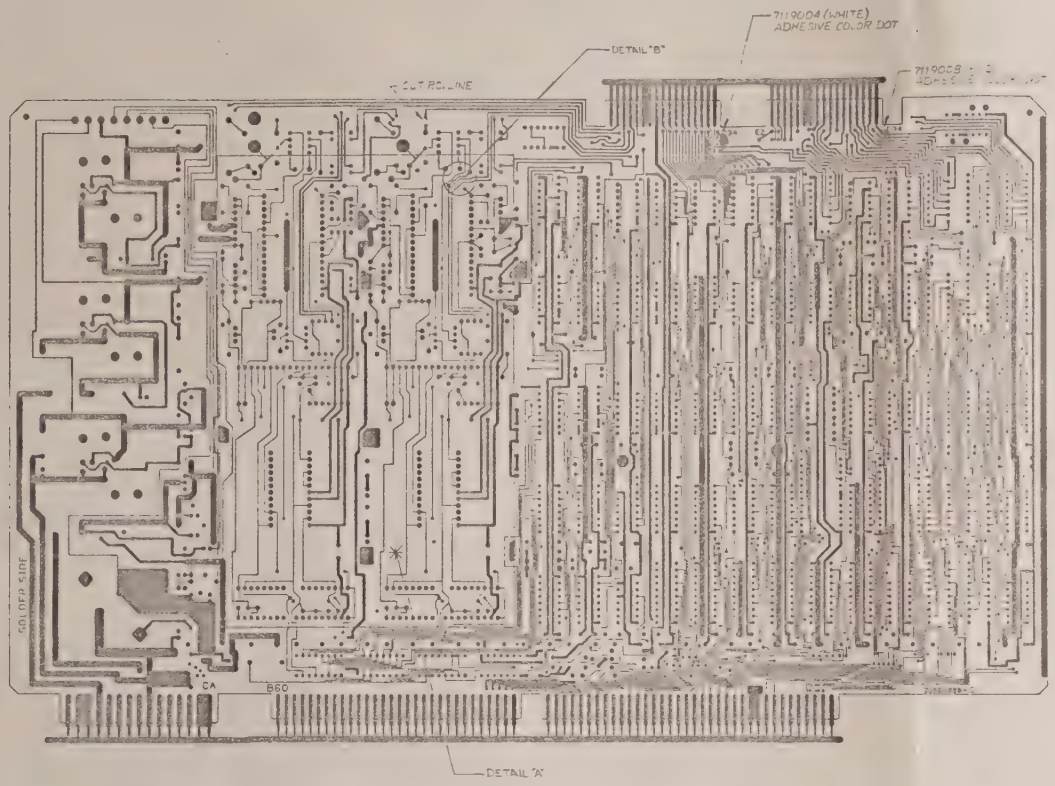
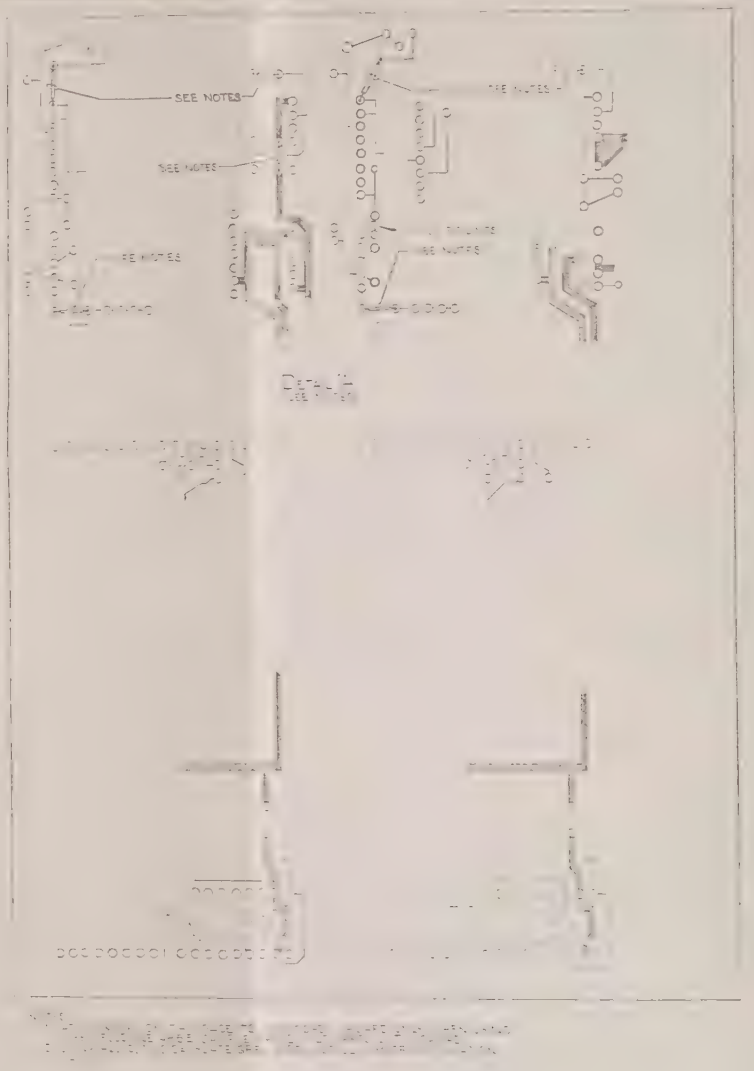
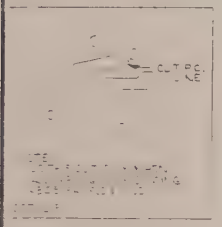
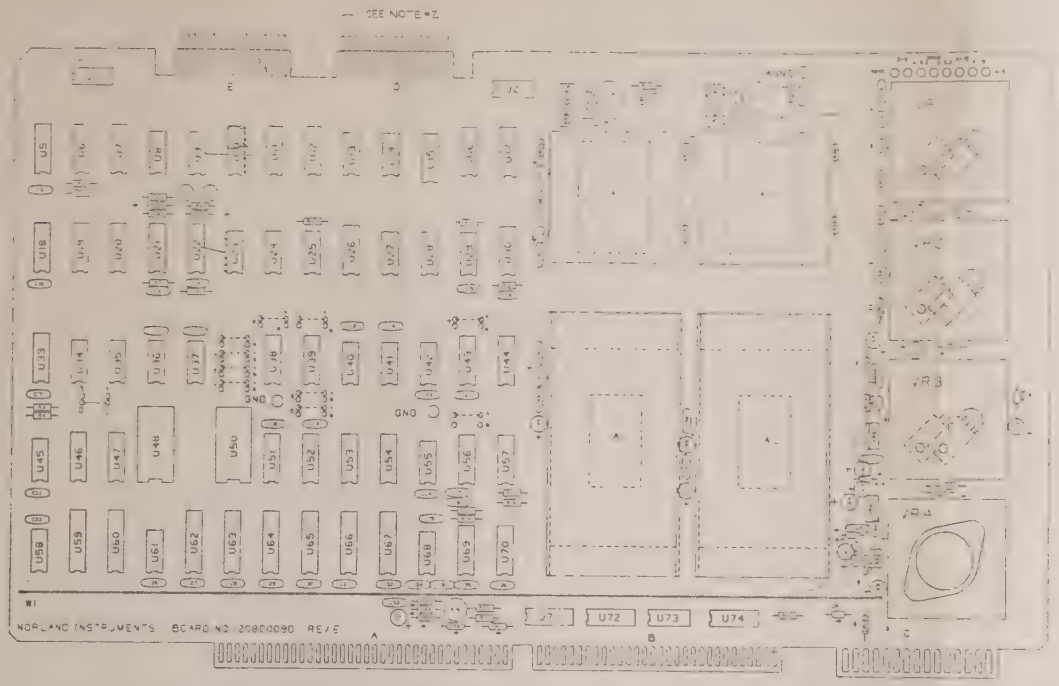


SOLDER SIDE

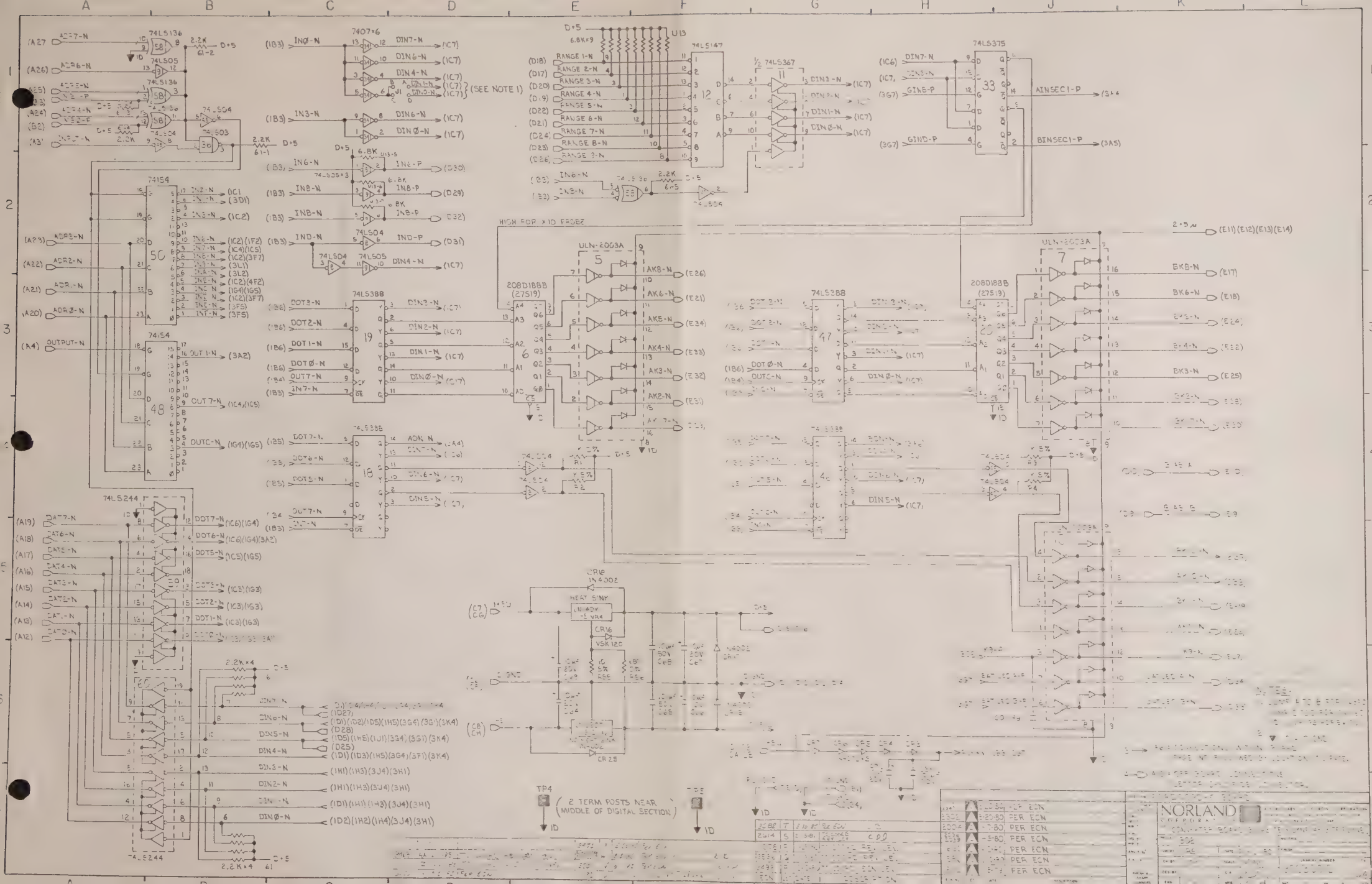




NORLAND INSTRUMENTS
A Subsidiary of Corob Corporation


SEE NOTE #2
U5
U18
U33
U45
U58
U46
U47
U48
U50
U59
U60
U61
U62
U63
U64
U65
U66
U67
U68
U69
U70
U71
U72
U73
U74
GND
GND
NORLAND INSTRUMENTS BOARD NO 2080008D REV E

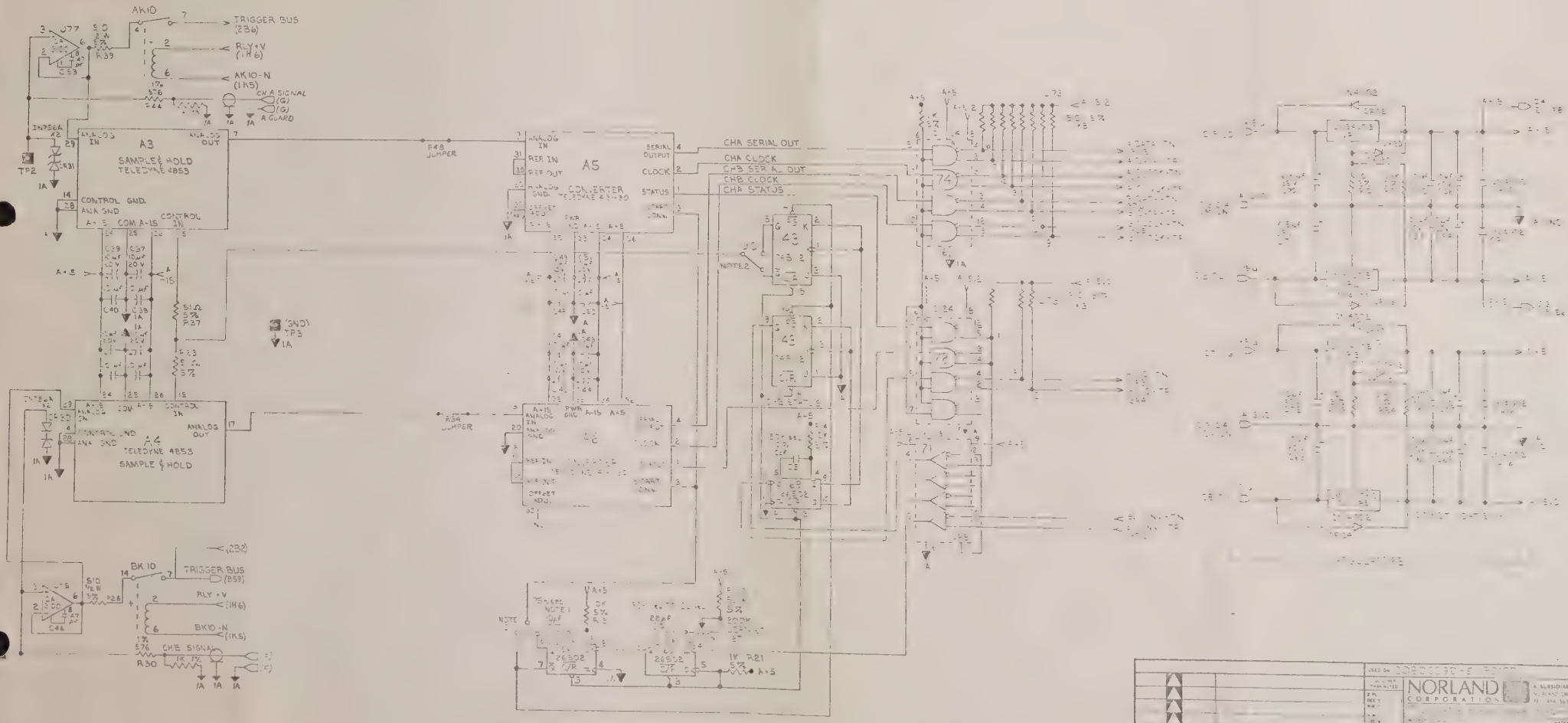
ASSEMBLY

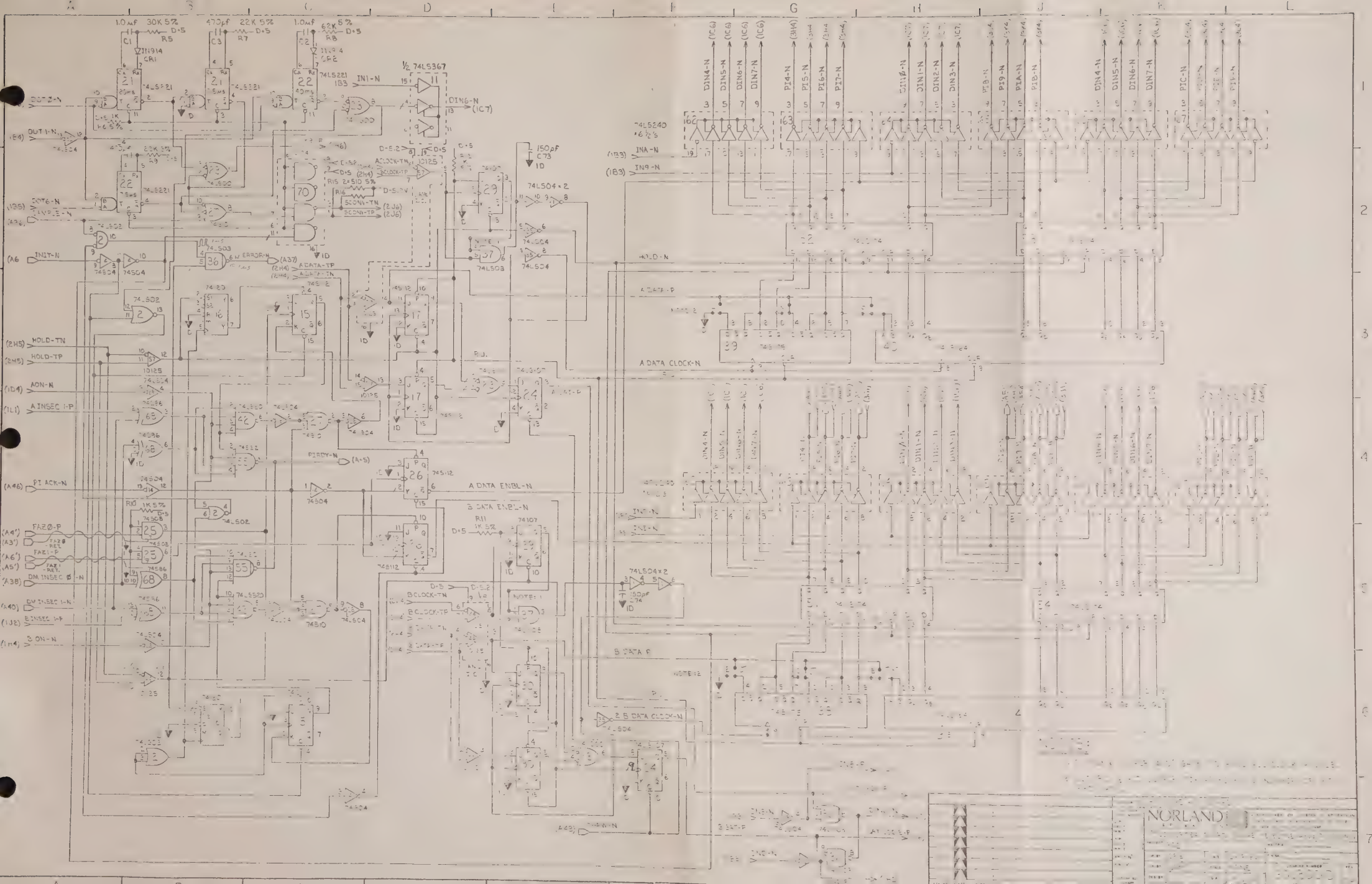

74LS136
74LS505
74LS504
74LS503
74154
74154
74LS244
74LS244
7407×6
74LS504
74LS505
74LS504
74LS538B
74LS538B
74LS538B
74LS147
74LS367
74LS375
ULN-2003A
ULN-2003A
208D188B (27S19)
208D188B (27S19)
74LS538B
74LS538B
74LS504
74LS504
HIGH FOR ×10 PROBE
HEAT SINK
CR16 VSK120
CR15 1N4002
TP4
2 TERM POSTS NEAR MIDDLE OF DIGITAL SECTION
NORLAND CORPORATION

NOTES:

1. THIS CAP. VALUE IS DEPENDENT ON THE ADC USED.
2. CUT THIS RUN AND ADD JUMPER IF OPPOSITE POLARITY IS REQUIRED FOR A SPECIFIC ADC.
3. MOUNT REGULATORS ON HEAT SINK UNLESS NOTED.
4. THE .22 MF, 10 MF, .01 MF [illegible] MUST BE NO MORE THAN 1.5" FROM THEIR [illegible].
5. THE CONVERTER HAS ITS OWN GND. PLANE.
6. ALL GNDS ON THIS SHEET ARE 1A GND.
7. 1% RES ARE 1/8 W METAL FILM & 5% ARE 1/4W CARBON, EXCEPT WHERE NOTED.
8. DIG IC'S TO BE BYPASSED WITH .01 MF CAPS EXCEPT ECL.

CONVERTER




NORLAND

NORLAND CORPORATION

NUMBER 307A018-D PAGE 1 OF 5

TITLE [illegible] (CONTINUED)

INIT BY	ME	DATE	[illegible]	CH BY	–	DATE	–				
ENG	CPD	DATE	[illegible]	QA	MES	DATE	[illegible]	MFG	D34	DATE	1-10-80

REV.	ECN NO	REVISION	BY	DATE	CHK'D	APP'D
B	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	CPD
C	3209	PER ECN	JGD	6-25-82		CPD
D	3433	PER ECN	JGD	1-26-83		

NUMBER 307A018-D

JOB # | DATE

NORLAND CORPORATION

DSN BY	DATE	CK'D	DATE
PROJ ENG	DATE	MFG	DATE

NAME IEEE 488 Module (Controller)

ITEM #	PART NUMBER	QTY	DESCRIPTION	
1	3070001A	1	PC Board	
2	1002072	3	1K 1/4 watt 5%	R3, R7, R9
3	1002083	1	3K 1/4 watt 5%	R1
4	1002091	2	6K2 1/4 watt 5%	R2, R10
5	1002096	6	10K 1/4 watt 5%	R4, R5, R6, R8, R11, R1
6	1069015	1	3K3, 15 resistor dip pac	U2
7	1069016	1	6K8, 15 resistor dip pac	U1
8	1359021	8	.01 mfd @ 50V	C1-C8
9	1409301	1	10 mfd @ 20V	C9
10				
11	2529015	3	74LS04	U8, U9, U15
12	2529038	1	7438	U6
13	2529102	1	74S08	U17
14	2529115	1	74LS174	U24
15	2529124	2	74LS02	U7, U26
16	2529126	1	74LS14	U28
17	2529127	1	74LS20	U27

REV	ECN	DATE	CHANGE
3/82	Z	5-7-82	PER ECN

PARTS LIST

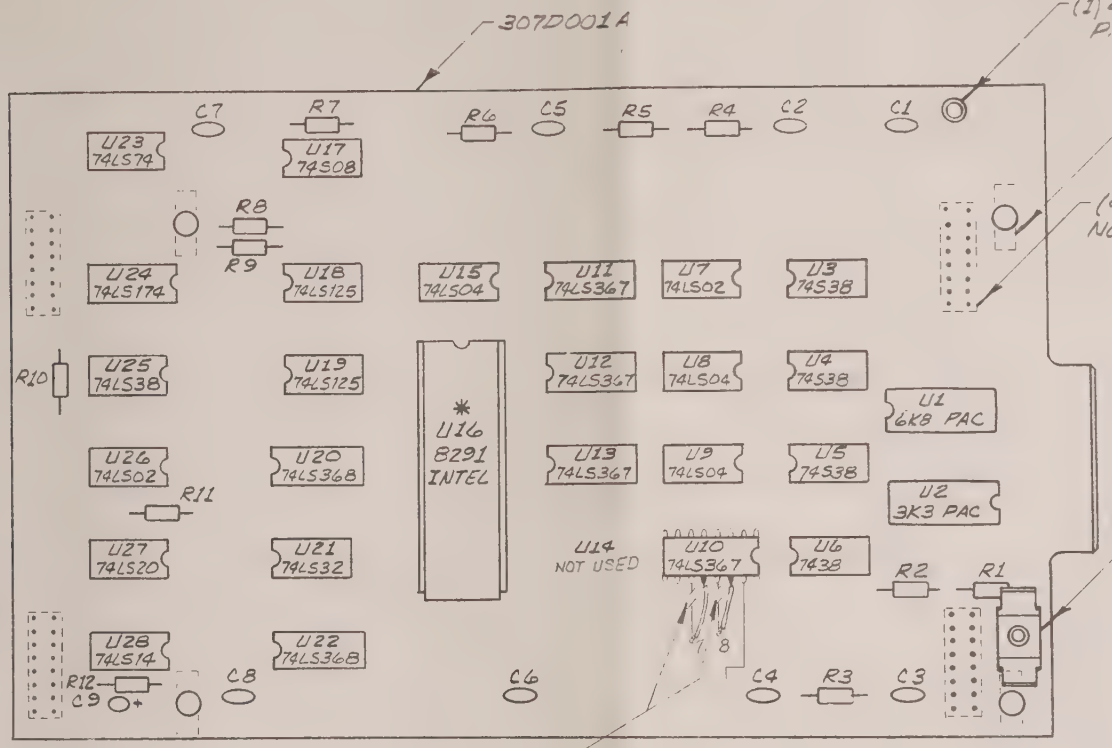
NORLAND CORPORATION

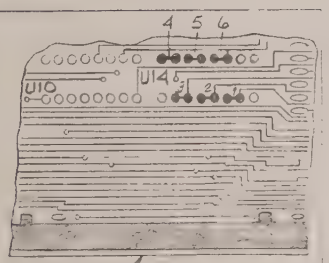
NUMBER 307A001B-D

IEEE 488 Module (Controller)

ITEM	PART NUMBER	QTY	DESCRIPTION	
1	2529130	1	74LS32	U21
2	2529132	1	74LS74	U23
3	2529134	2	74LS125	U18, U19
4	2529140	4	74LS367	U10 - U13
5	2529141	2	74LS368	U20, U22
6	2529155	1	74LS38	U25
	2529249	3	74S38	U3, U4, U5
8	3509022	1	40 pin socket	U16
9	4509101	1	PC Terminals (Lambion)	
10	4509215	1	Male Quick Connect Terminal	
11	4679510	4	16 pin connectors	
12	6292004	1	Rivet	
	7709500	4	Plastic Standoff	
	2629029	1	Intel 8291	U16
1	6292017	.1'	20 GA. SLATE GREY WIRE	

ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE





BOARD EDGE
DETAIL "A" (SOLDER SIDE)
(SEE JUMPER LISTING)

JUMPER LISTING (USE 4619017 30GA. SLATE GREY WIRE)
1.) U14 PIN 2 TO U14 PIN 3.
2.) U14 PIN 4 TO U14 PIN 5.
3.) U14 PIN 6 TO U14 PIN 7.
4.) U14 PIN 9 TO U14 PIN 10.
5.) U14 PIN 11 TO U14 PIN 12.
6.) U14 PIN 13 TO U14 PIN 14.
7.) U10 PIN 12 TO FEED THRU AS SHOWN.
8.) U10 PIN 14 TO FEED THRU AS SHOWN.

NOTE:
* 1) DESIGNATES I.C.'S THAT REQUIRE A SOCKET ASSEMBLY. REFER TO PARTS LIST FOR CORRECT SOCKET.

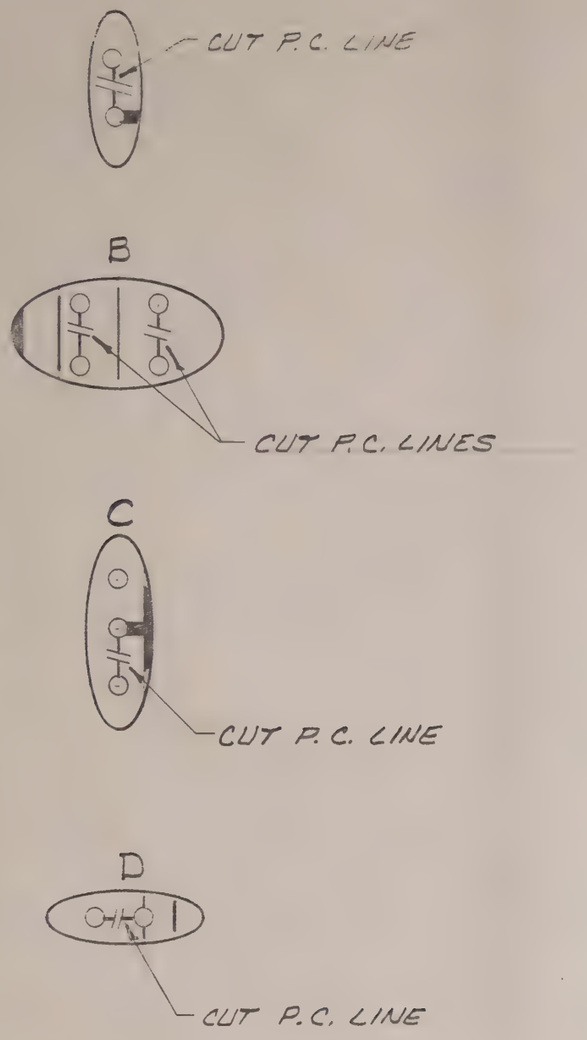
ECN NO	LETT	DATE	DESCRIPTION
3433	D	1-26-83	PER ECN
3209	C	1 CAP	PER ECN (CPD)
3162	B	5-1 -	PER ECN (CPD)

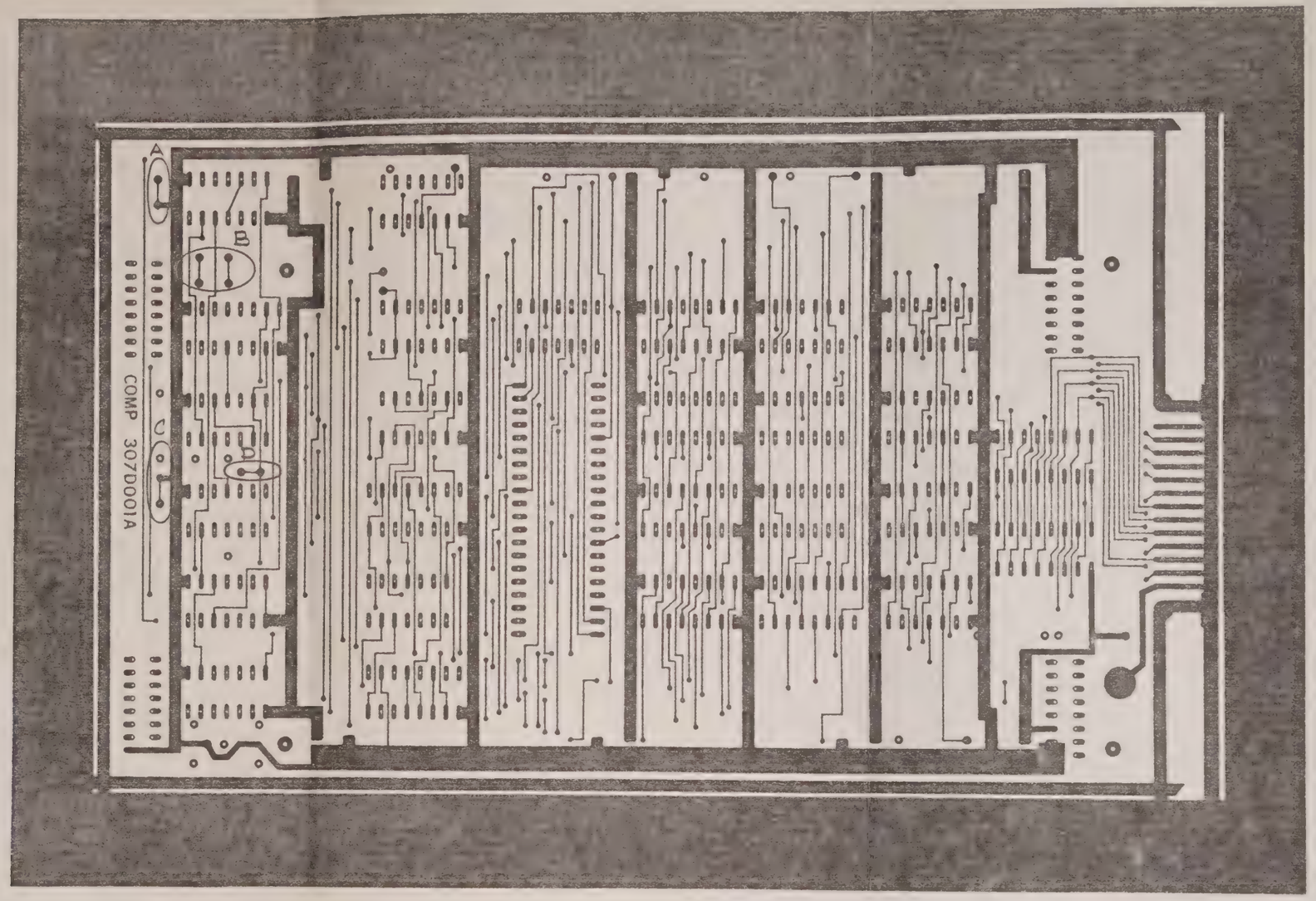
USED ON
TOL OTHER THAN NOTED
2 PL DEC ±( ) MM ±( )
3 PL DEC ±( ) MM ±( )
ANG ± ½°
FIN √
BREAK ALL SHARP CORNERS

NORLAND CORPORATION
A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON, WI 53538
TEL (414) 563-8456 TELEX 26-5448

TITLE IEEE 488 MODULE BOARD ASSEMBLY

PROJECT	307	MATERIAL	
DR BY	[illegible]	DATE	1/4/80
CH BY	[illegible]	SCALE	
DES BY	[illegible]	Q A	
ENG		MFG	
FINISH			
DRAWING NUMBER	307A001B	REV	D
SHT	1 OF 2	SHTS	





ECN NO	LETT	DATE	DESCRIPTION

UNL OTHER THAN NOTED
2 PL DEC ± (—)
MM. ± (—)
3 PL DEC ± (—)
MM. ± (—)
ANG ± ½°
FIN √
BREAK ALL SHARP CORNERS

NORLAND INSTRUMENTS
A Subsidiary of Cordis Corporation

TITLE IEEE 488 MODULE BOARD ASSEMBLY

PROJECT	307			MATERIAL	—
DR BY	TKJA	DATE	1/8/80	FINISH	—
DES BY		SCALE	—	DRAWING NUMBER	307A001B-D
CH BY		PROJ MGR			
PROJ ENG		PROD MGR		SHT. 2 OF 2 SHTS	

TERMINALS

ECN	DATE	WAS	TOLERANCES UNLESS NOTED	
			DEC ± .01	TITLE
			ENG ± .010	MACHINE
			ANGLE ± ½°	MAT'L
			.03 V MIN.	FINISH
			BREAK	DRAWING NUMBER 3075001D

NORLAND CORPORATION

NUMBER [illegible] PAGE [illegible] OF 5

TITLE [illegible]

INIT BY	[illegible]	DATE	[illegible]	CH BY	—	DATE	—				
ENG	[illegible]	DATE	[illegible]	QA	[illegible]	DATE	[illegible]	MFG	[illegible]	DATE	[illegible]

REV.	ECN NO	REVISION	BY	DATE	CHK'D	APP'D
H	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
I	3093	PER ECN	TKW	3-19-82		CPD
J	3201	Per ECN	TKW	6-11-82		CPD
K	3235, 3300 3288, 3317	PER ECN's	TKW	8-24-82		DD.
L	3471	PER ECN	JGD	5-24-83		
M	3556	PER ECN	JGD	7-21-83		
N	3932	PER ECN	TKW	1-8-85		

NUMBER 3038A001D-N

DS-032-1

W.O.	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 308A001D-N			SHT 2 OF 8
DR BY	DATE	Q.A.	DATE
JWB	6-7-80	[illegible]	6-16-80
PROJ. ENG	DATE	MFG	DATE
[illegible]		LGH	6-11-80

NAME: Converter Board Assembly (3256C Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2080009D	1	PC Board Rev. E	
2	2080188P	2	Relay Drive Prom (27S19)	U6, U20
3	1002024	3	10 ohm 1/4 watt 5% Carbon Resistor	R51,R53,R55
4	1002041	2	51 ohm 1/4 watt 5% Carbon Resistor	R23,R37
5	1002065	2	510 ohm 1/4 watt 5% Carbon Resistor	R15,R16
6	1002068	2	680 ohm 1/4 watt 5% Carbon Resistor	R54,R56
7	1002072	10	1K 1/4 watt 5% Carbon Resistor	R1-R4,R6,R10-R12,R21,R22
8	315A028A	2	Converter Coax Cable	cost 12.82 EA
9	1002084	1	3.3K 1/4 watt 5% Carbon Resistor	R52
10	1002089	1	5.1K 1/4 watt 5% Carbon Resistor	R20
11	1002096 or 1007096	1	10K 1/4 watt 5% Carbon Resistor	R13
12	1002103	1	20K 1/4 watt 5% Carbon Resistor	R14
13	1002104	2	22K 1/4 watt 5% Carbon Resistor	R7,R9
14	1002107	1	30K 1/4 watt 5% Carbon Resistor	R5
15	1002115	1	62K 1/4 watt 5% Carbon Resistor	R8
16	1002265	2	510 ohm 1/2 watt 5% Carbon Resistor	R26,R39
17	4[illegible]225	2	Cable Tie	

[illegible]	A	2-22-80	PER ECN
2362	B	6-16-80	PER ECN
2334	C	8-20-80	PER ECN
2492	D	10-10-80	PER ECN
2536	E	11-12-80	PER ECN

2573	F	11-25-80	PER ECN C
2302	G	1-12-81	SHT 2 LINES 5 THRU 8

PARTS LIST

NORLAND CORPORATION

W.O. #	QTY
J.C. #	DATE

NAME Converter Board Assembly (3256C Teledyne 4853/Teledyne)

SCHEMATIC	308A001D-N	SHT 3 OF 5
DR BY	DATE	APPD	DATE
VRUS	6-8-83	[illegible]	6-8-83
PROD ENG	DATE	MFG	DATE
TS	6-11-83	RH	6-11-83

ITEM #	PART NUMBER	QTY	DESCRIPTION	
1	1029169	2	576 ohm 1/4 watt 1% Film 100 PPM	R30,R44
2	1079005	1	2.2K Dip Pac 2% Dale LDP14-02	U61
3	1079006	1	6.8K Dip Pac 2% Dale LDP14-02	U13
4	1079007 or 1079008	1 1	510 ohm Dip Pac Dale 14-02 or equiv. 560 ohm	U73
5	10 [illegible]	2	1K 1/4 watt 1% Film 100 PPM	
6				
7				
8				
9				
10				
11				
12	1249002	1	Pot, Cermet, 18T 200K	R19
13	1359008	1	.001 mfd Ceramic Cap.	
14	1359021	40	.01 mfd @ 50V 10% Ceramic Disc	C9-C36,C38,C40,C41,C43 ,C50 ,C55,C57 C60,C61,C65,C68,C48
15	1359028	1	22 pf Ceramic Cap, 10%	C8
16	1359035	2	10 pf @ 600V 5% Centralab DTZ-10, NPO	C5,C6
17	1359036	2	47 pf @ 600V 5% Centralab DTZ-47, NPO	C46,C53

REV	DATE	CHANGE	BY	APP	DATE	CHANGE	REV	BY	DATE	CHANGE

W.O.	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE

NUMBER 308A001D-N			SHT 4 OF 8
DES. ENG	DATE	Q.A.	DATE
JMB	6/9/80	[illegible]	6-16-80
PROJ. ENG	DATE	MFG.	DATE
[illegible]	[illegible]	LSH	6-11-80

NAME: Converter Board Assembly (3256C Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY	DESCRIPTION	
1	1359041	2	470 pf @ 1000V 10% Ceramic Disc Centralab DD471	C3,C4
2				
3	1379030	2	150 pf silver mica	C73,C74
4	1409301	17	10 mfd @ 20V 10% Solid Tantalum Kemet T368B106K020AS	C7,C37,C39,C42,C44,C49,C51,C56,C58,C59 C62-C64,C66,C67,C69,C72
5	1529017	2	1 mfd @ 50V 20% CAPACITOR, CERAMIC, MONOLITHIC	C1,C2
6	1409316	2	6.8 mfd @ 35V 10% Solid Tantalum Kemet T368B685K035AS	C70,C71
7	1709005 or 1709052	4	1N756A 8.2V Zener	CR30,CR31
8	1729000	17	1N4002 Diode	CR3-CR7,CR10-CR12,CR14,CR15,CR17,CR18,CR22-25 CR29
9	1749000	2	1N914 Diode	CR1,CR2
10	1749005	3	VSK120 Diode	CR13,CR16,CR20
11				
12	2489017	2	4132-22 Teledyne 12 Bit ADC	A5,A6
13	2489016	2	4853 Sample & Hole Teledyne	A3,A4
14	2529014	1	74S04	U14
15	2529015	5	74LS04	U1,U8,U28,U35,U45
16	2529017	1	74LS05	U9
17	2529019	1	74LS08	U37

ECN	INIT	DATE	CHANGE

ECN	INIT	DATE	CHANGE

ECN	INIT	DATE	CHANGE

W.O.#	QTY
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

NUMBER 308A001D-N			SHT 5 of 8
DR BY	DATE	E.A.	DATE
JWK	6/30/86	[illegible]	6-16-86
PROJ. ENG.	DATE	MFG	DATE
TGS	11-4-85	DSH	6-11-86

NAME: Converter Board Assembly (3256C Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529022	1	74S10	U27
2	2529047	1	74107	U29
3	2529048	5	74S112	U15,U17,U26,U30,U43
4	2529051	1	74120	U16
5	2529065	2	74154	U48,U50
6	2529102	1	74S08	U25
7	2529113	1	7407	U34
8	2529115	4	74LS174	U51,U52,U53,U54
9	2529123	1	74LS00	U23
10	2529124	1	74LS02	U2
11	2529127	1	74LS20	U42
12	2529133	1	74LS107	U24
13	2529135	1	74LS136	U58
14	2529140	1	74LS367	U11
15	2529143	2	74LS164	U40,U41
16	2529150	1	74LS03	U36
17	2529171	6	74LS240	U62-U67

ITM	QTY	DATE	CHANGE	ECN	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE

W.O.	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 308A001D-N		SHT 6 OF 3	
DR BY	DATE	C. A	DATE
VMB	6-9-80	[illegible]	6-16-80
PROJ ENG.	DATE	MFG	DATE
[illegible]	[illegible]	DSH	6-11-80

NAME: Converter Board Assembly (3256C Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529174	4	74LS388	U18,U19,U46,U47
2	2529175	1	74S22	U55
3	2529183	1	74LS375	U33
4	2529184	2	74S175	U38,U39
5	2529188	1	74S86	U68
6	2529189	1	74LS147	U12
7	2529190	2	74LS221	U21,U22
8	2529191	2	26S02	U56,U69
9				
10	2649002	3	10124 Motorola	U70,U72,U74
11	2649003	3	10125 Motorola	U44,U57,U71
12	2649007	3	ULN2003AJ TI or Sprague	U5,U7,U10
13	3009209	2	CA3100T Op Amp	U75,U77
14				
15	3019005	1	LM340T-5.0 +5V Regulator	VR3
16	3019009	1	LM140T-5.0 +5V Regulator	VR4
17	3019010	1	LM340T-15 +15V Regulator	VR1

ECN	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

ITEM #	QTY
ASSY #	DATE

NUMBER	308A001D-N		
DES'D	DATE	Q.A.	DATE
W.B.	6-12-80		
PROJ. ENG.	DATE	MFG.	DATE
T.S.		LSH	6-11-80

NAME: Converter Board Assembly (3256C Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY	DESCRIPTION	
1	3019011	2	LM320T-5.2 -5.2V Regulator	VR5,VR6
2	3019012	1	LM320T-15 -15V Regulator	VR2
3	3509018	2	16 pin IC socket	U6,U20
4	4219025	2	RELAY	AK10,BK10
5				
6	4501101	5	Terminal Post, Cambion 1245-2	TP1-TP5
7	4509850	86	Feed Thru Terminal	
8	4549006	.10'	Clear Heat Shrink 1/8" dia.	
9	4569000	1	Buss Bar	
10	4619017	2.17'	30 ga. wire (slate grey)	
11	4659021 or 4659023	3 3	Heat Sink I.E.R.C. UP2-420-CB TO-220 Heat Sink Thermalloy 6081B-TO-220	H1,H2,H3
12	4659021 Or 4659024	1 1	Heat Sink	H4
13				
14	6259007	8	#6-32 Pem Stud	
15				
16	6330302	6	#6-32 Hex Nut	
17				

ITEM	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE

W.O.	QTY.
JOB #	DATE

PARTS LIST

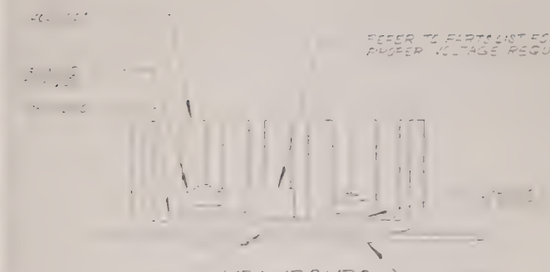
NORLAND CORPORATION

NUMBER	308A001D-N	SHT. 8 OF 8	
DR. BY	DATE	Q.A.	DATE
JMB	6/6/80	[illegible]	6-16-80
PROJ. ENG.	DATE	MFG.	DATE
[illegible]	6-11-80	DSH	6-11-80

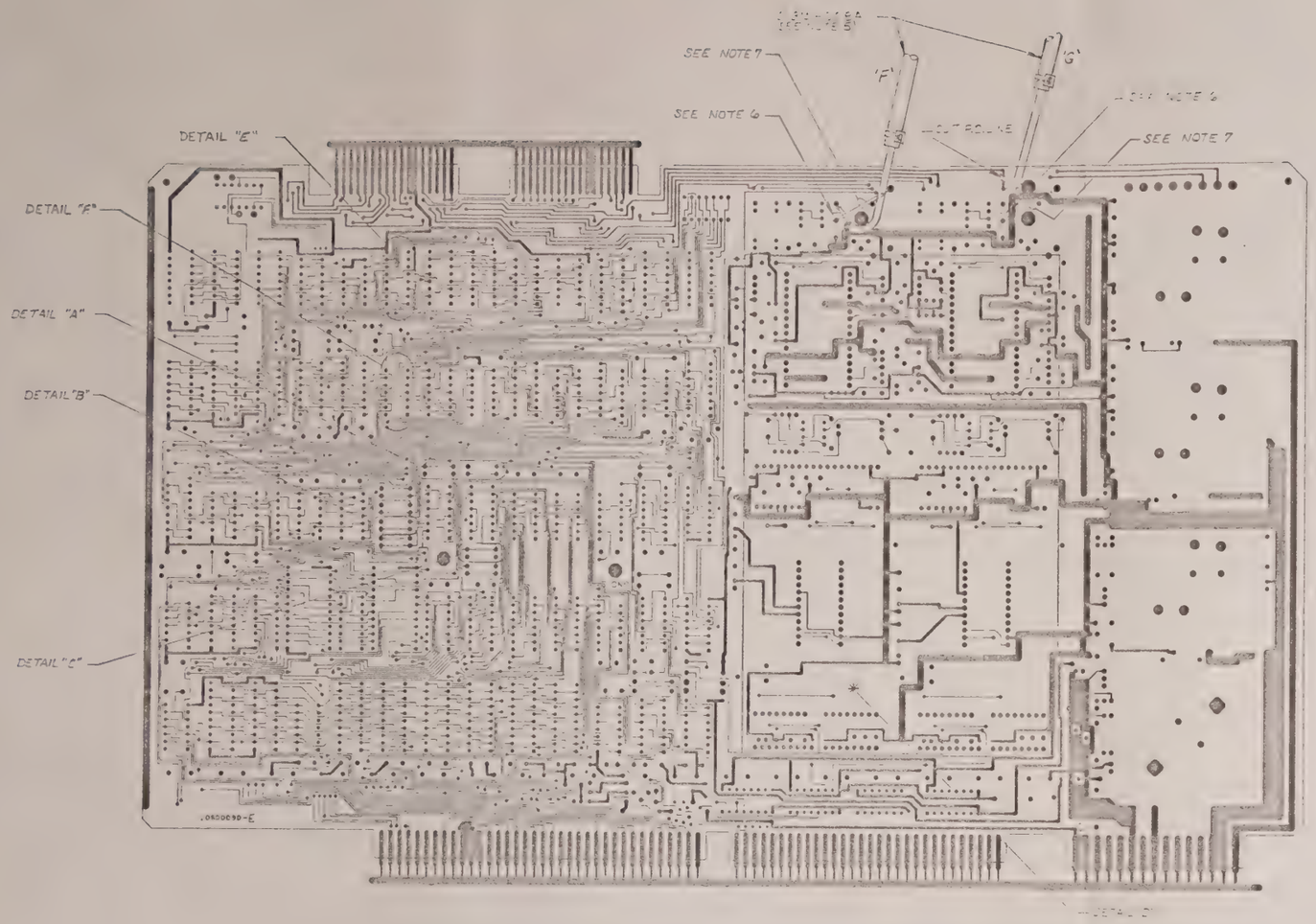
NAME: Converter Board Assembly (3256C Teledyne 4853/Teledyne)

ITEM #	PART NUMBER	QTY.	DESCRIPTION
1	6481002	8	#6 Lockwasher
2	7109025	.18'	Polyester Tape (1/2" wd)
3	7119008	2	Red Color Dot
4	7200103	2	Card Ejectors w/pins S-203
5	2529172	2	74LS244 U59, U60
6	7119004	1	ADHES. Color Dot (WHITE)
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

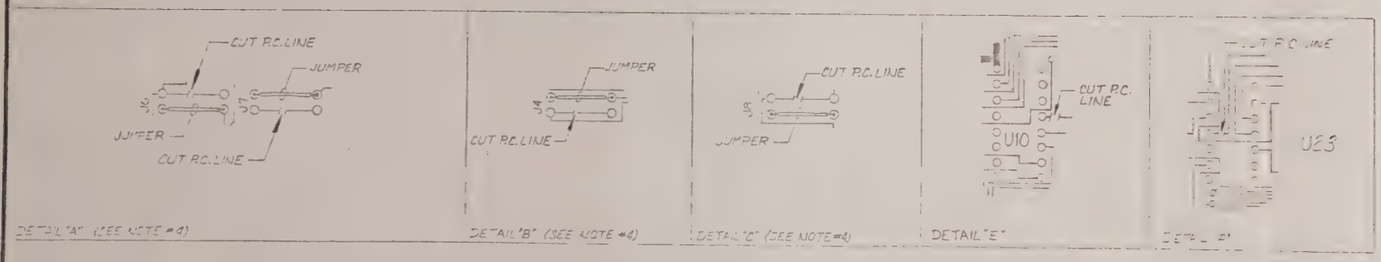
ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE



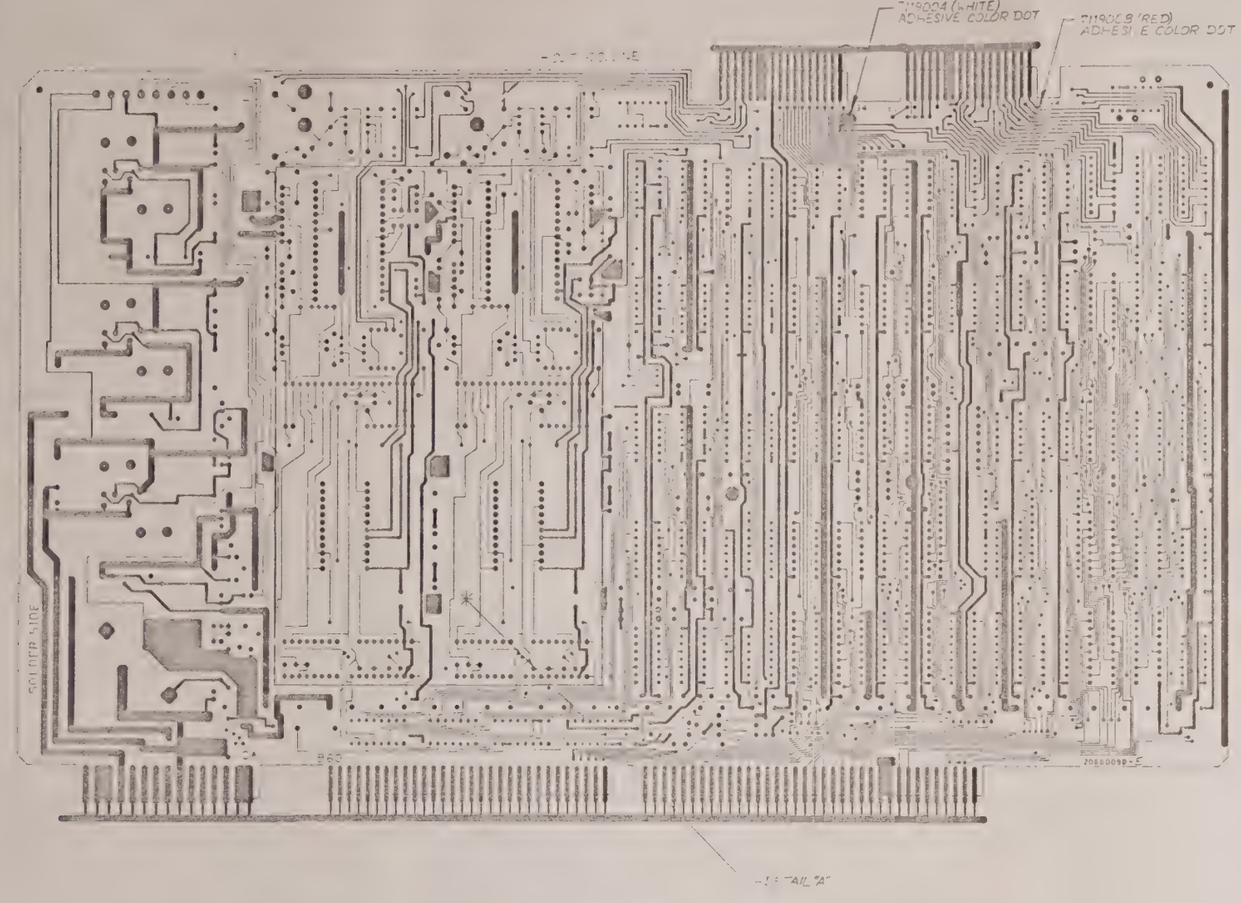
ASSEMBLY

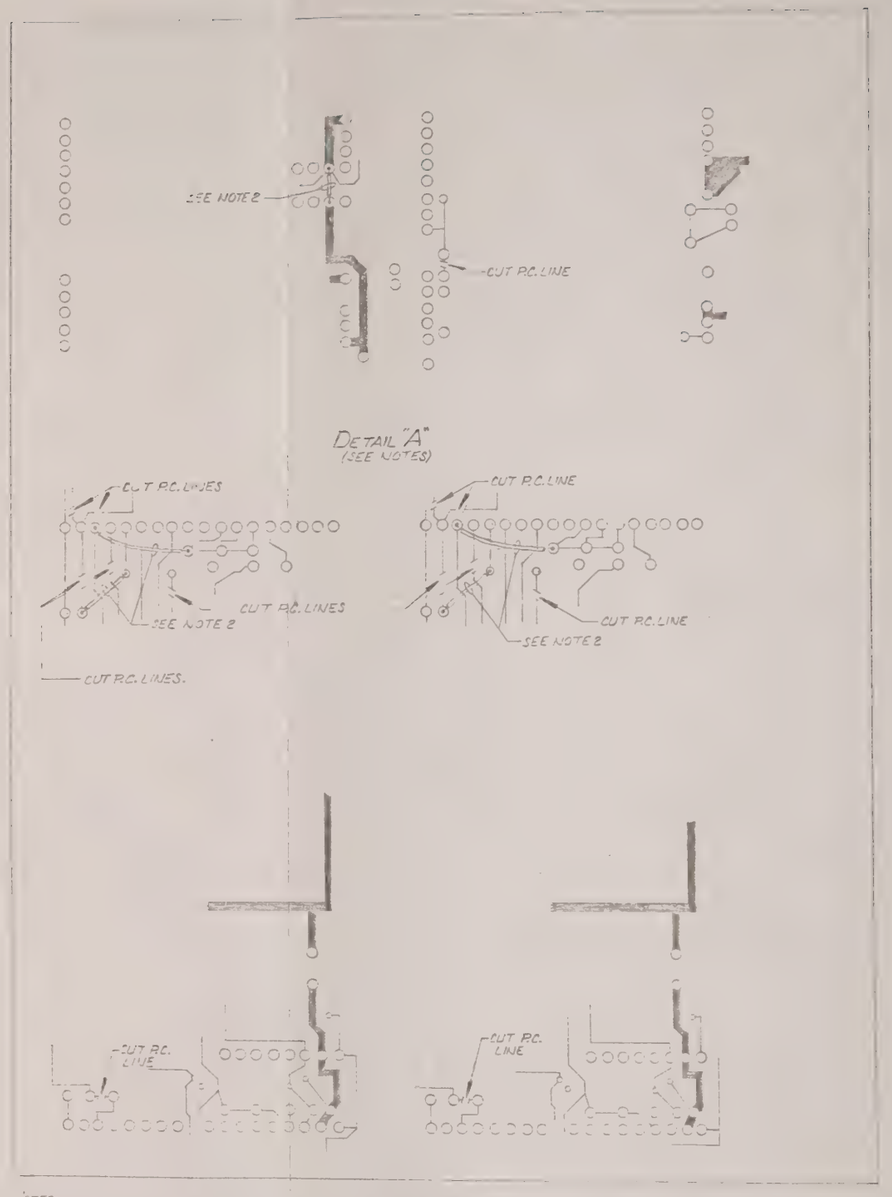


COMPONENT SIDE



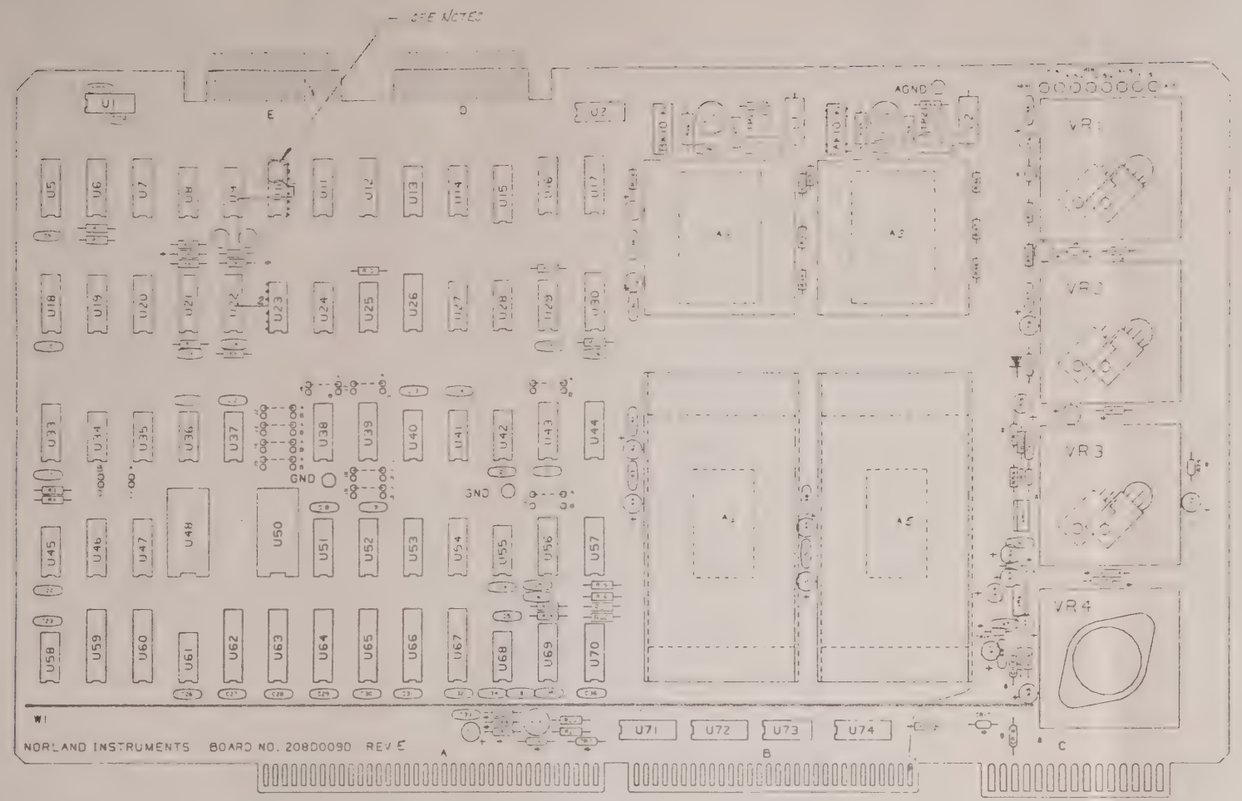
DETAIL "D"
(SEE NOTES)





NOTES:
1) DO CUTS AS SHOWN IN DETAIL "A" AND NEAR KEY
2) USE 0.010" 30 GA WIRE SLATE GREY AFT
BOARD AS SHOWN IN DETAIL "A" AND NEAR KEY

NORLAND


SEE NOTES
E
D
C
A
B
AGND
GND
GND
VR1
VR2
VR3
VR4
A1
A2
A3
A4
U1
U2
U5
U6
U7
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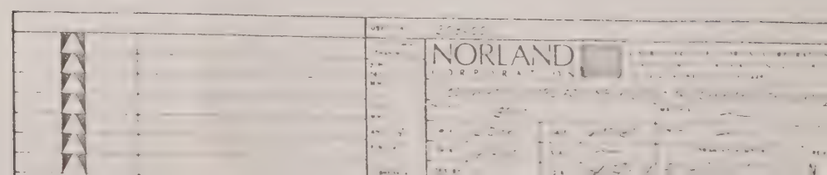
U70
U71
U72
U73
U74
W1
NORLAND INSTRUMENTS BOARD NO. 20800090 REV E

ASSEMBLY


NORLAND

HIGH EDGE X10 PROBE

TP4

TP5

(2 TERM POSTS NEAR MIDDLE OF DIGITAL SECTION)

NOTES

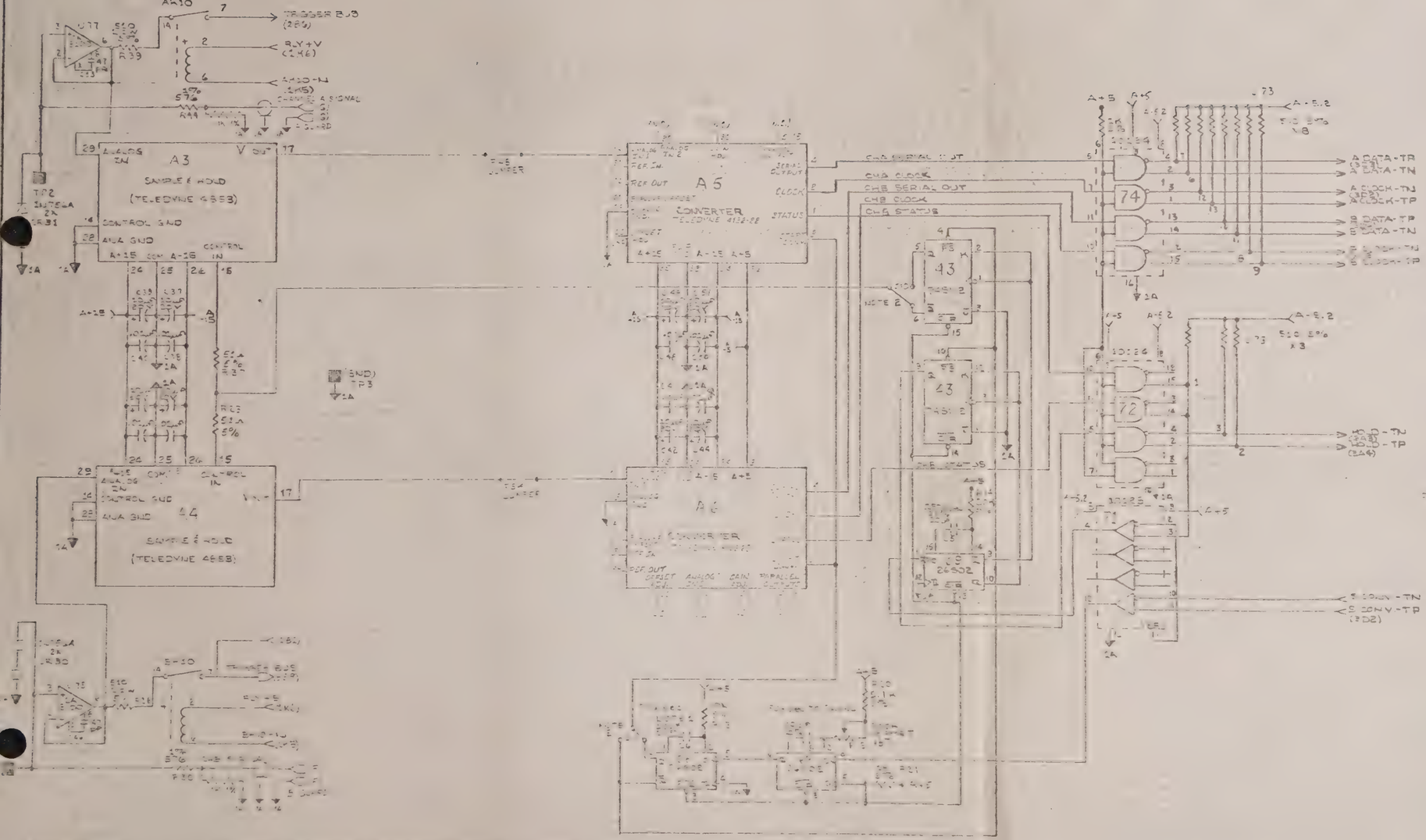
1 JUMP A TO B FOR 1 SEC
JUMP C TO D FOR 2 SEC
NO JUMPERS FOR 5 SEC

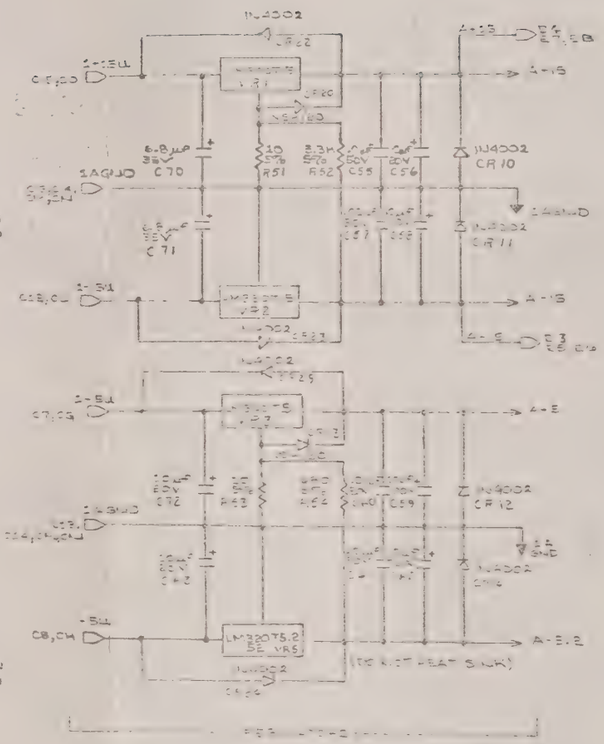
3 ⟶ 1A6 & CONNECTIONS WITHIN BOARD
ARE TO BE FOLLOWED BY LOCATION ON FACE

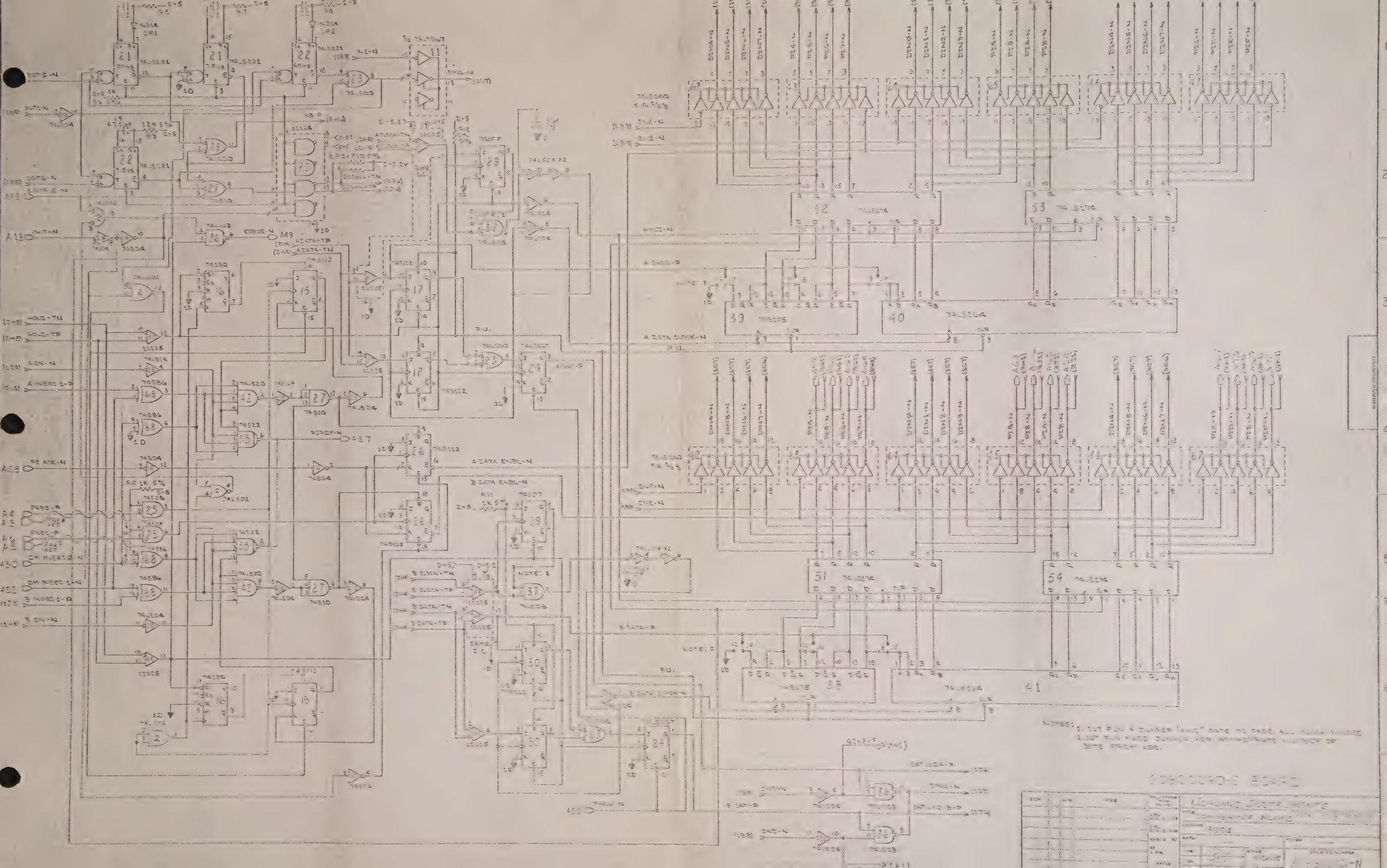
4 ⟶ A1D & E OFF BOARD CONNECTIONS
LETTER SPECIFIES CONNECTOR

208D009D-E BOARD

NOTES
1. THIS CAP. VALUE IS DEPENDENT ON THE ADC USED.
2. CUT THIS RUN AND ADD JUMPER IF OPPOSITE POLARITY IS REQ'D. FOR A SPECIFIC ADC.
3. MOUNT REGULATORS ON HEAT SINK UNLESS NOTED.
4. THE .22µF, 10µF, .01µF & 6.8µF CAPS MUST BE NO MORE THAN 1.5" FROM THEIR ASSOCIATED REGULATORS
5. THIS CONVERTER HAS ITS OWN GND PLANE
6. ALL GNDS ON THIS SHEET ARE 1A GND.
7. 1% RES ARE 1/8 W METAL FILM & 5% ARE 1/4 W CARBON EXEPT WHERE NOTED.
8. DIG. IC'S TO BE BYPASSED WITH .01µF CAPS EXCEPT ECL.






NOTES:
1. CUT P.U. & JUMPER "LINE" NOTE TO THESE ALL
2. CUT P.U. NOTE JUMPER FOR INTENDED RATE
SYNC STRIP ONLY.

NORLAND CORPORATION

NUMBER [illegible] G PAGE 1 OF —

TITLE [illegible]

INIT BY	[illegible]	DATE	[illegible]	CH BY	—	DATE	—				
ENG	[illegible]	DATE	[illegible]	QA	[illegible]	DATE	[illegible]	MFG		DATE	

REV.	ECN. NO.	REVISION	BY	DATE	CHK'D	APP'D
[illegible]	[illegible]	[illegible]	[illegible]			[illegible]
C	3331	PER ECN'S	JGD	[illegible]		[illegible]
D	3349	PER ECN	JGD	11-9-82		
E	3374	PER ECN	JGD	[illegible]		
F	3806	PER ECN	JGD	7-19-84		
G	3772	PER ECN	L.E.	8-17-84		

NUMBER [illegible] G

	QTY.
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

NUMBER 309A001D- G SHT 1 OF 4

DR BY	DATE	CK'D	DATE
JMC	4/1/81	[illegible]	4/1/81
PROJ. ENG.	DATE	MFG.	DATE
		[illegible]	4/1/81

NAME: ROM RAM #2 BOARD ASSEMBLY

ITEM #	PART NUMBER	QTY	DESCRIPTION	
1	309D001D	1	PC Board (Rev B)	
2	1002072	3	1K ohm 5%	R1,R3,R4
3				
4	1069002	1	1K Resistor Pack	U3
5	1069009	1	10K Resistor Pack	U36
6	1359021	22	.01 mfd	C2,C3,C5-C11,C13-C20,C22-C24,C26,C28
7	1409301	5	10 mfd @ 20V	C1,C12,C21,C25,C27
8	1509001	1	200 mfd @ 25V	C36
9				
10	1529035 OR 1529024	1	.22 mfd @ 50V -20/+80% ±20%	C29
11	1729000	1	1N4002	CR1
12	2529024	1	74LS10	U20
13	2529114	2	74LS139	U6,U22
14	2529115	1	74LS175	U16
15	2529126	2	74LS14	U5,U7
16	2529127	1	74LS20	U21
17	2529130	1	74LS32	U2

REV	ECN	DATE	CHANGE
2714	A	4/6/81	Per ECN

ECN	REV.	DATE	CHANGE

ECN	REV.	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

	QTY.
	DATE

NUMBER 309A001D-G

DR'N BY	DATE	C'K'D	DATE
			4/7/81
PROJ. ENG.	DATE	MFG.	DATE
			4/7/81

NAME: ROM RAM #2 BOARD ASSEMBLY

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529131	1	74LS51	U30
2	2529132	1	74LS74	U8
3				
4	2529154	2	74LS37	U1, U19
5	2529155	1	74LS38	U23
6	2529171	5	74LS240	U31-U35
7	2529172	2	74LS244	U7,U18
8	3019009	1	LM140K-5	VR1
9	3509019	6	18 Pin Socket	U10,U11,U12,U13,U14,U15
10	3509020	6	24 Pin Socket	U25-U29,U38
11				
12	4501101	1	Terminal Post	
13	4659021 or 4659024	1	Heat Sink	
14	6259007	2	Pem Stud 6-32	
15	6330002	2	#6 Small Nut	
16	6520002	2	#6 Lockwasher	
17	7503000		Thermal Compound	

ITEM	MFG	DATE	CHANGE	ECN	REV	DATE	CHANGE	ECN	REV.	DATE	CHANGE

W.O. #	QTY.
JCB #	DATE

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

NUMBER 309A001D-G SHT. 1 OF 4

DRAWN BY	DATE	Q.A.	DATE
Jmb	4-7-81		4-7-81
CHKD BY	DATE	MFG	DATE
		Mfg	4-7-81

NAME: ROM RAM #2 BOARD ASSEMBLY

ITEM NO.	PART NUMBER	QTY.	DESCRIPTION
1	7700103	2	Ejector
2	2669007	6	2114 U10-15
3	7119010	1	DARK BLUE COLOR DOT
4			
5			
6			
7			
8			
9			
10			
11			
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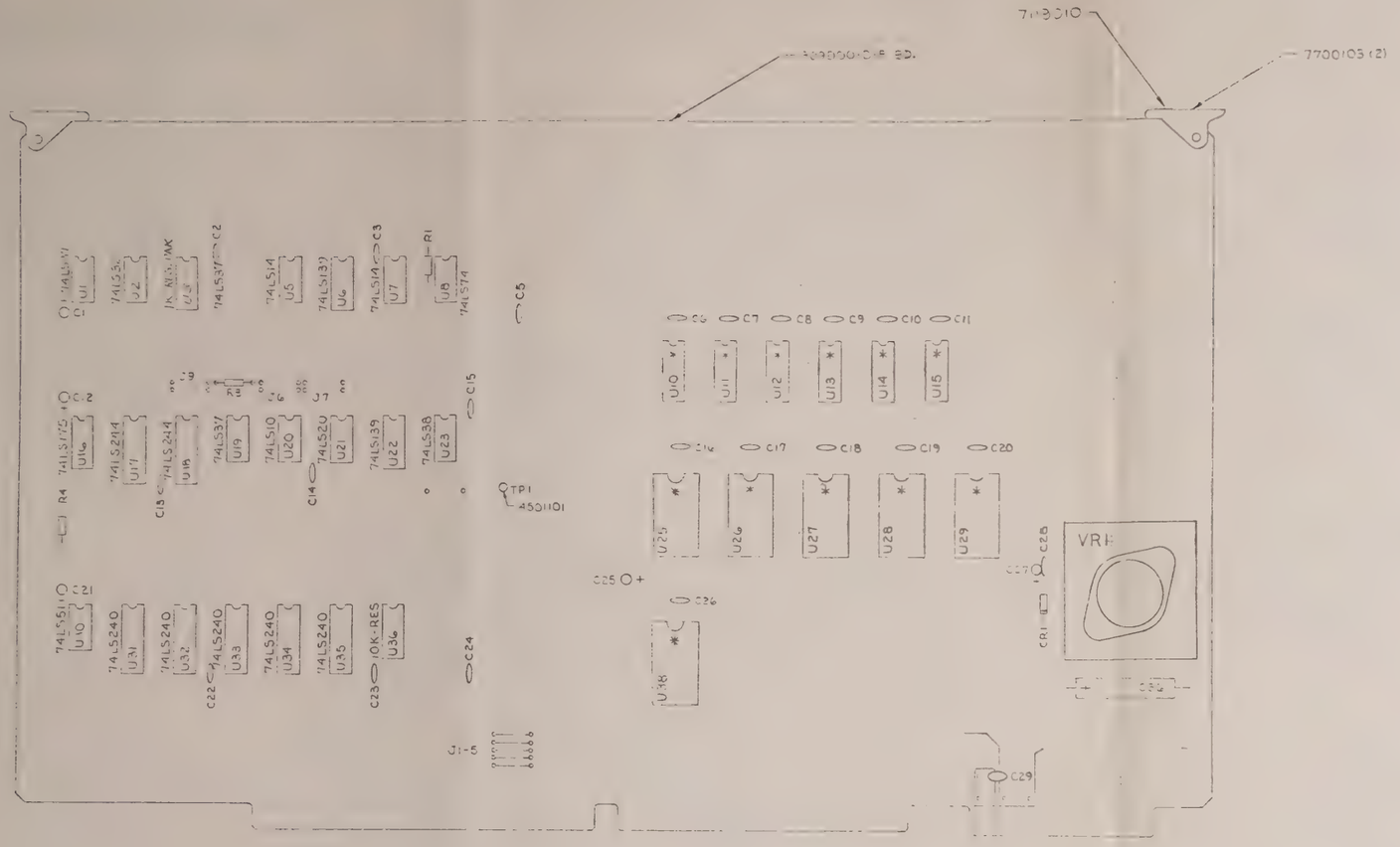
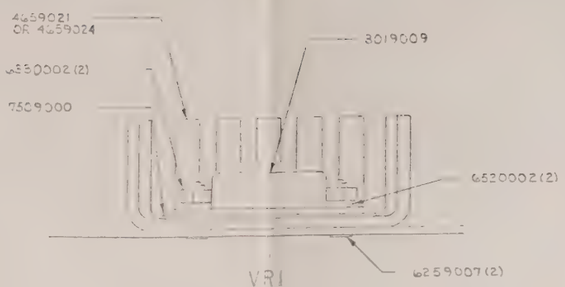
14			
15			
16			
17			

ECO NO.	DATE	CHANGE	ECO NO.	DATE	CHANGE	DRN	CHK	DATE	REVISED





NOTES:
1) (*) DESIGNATES I.C.'s THAT REQUIRE A SOCKET ASSEMBLY. REFER TO THE PARTS LIST FOR THE CORRECT SOCKET ASSEMBLY.
2) APPLICABLE SPECIFICATIONS;
   A. SOLDER JOINT SPECIFICATION 2505002A.
   B. CLEANING SPECIFICATION 3505004A.
3) THE BOARD SHOULD BE CLEANED BEFORE THE HEAT SINKS ARE PUT ON. ONCE THE THERMAL COMPOUND IS APPLIED, THE BOARD SHOULD NOT BE PUT IN THE DEGREASER.

			USED ON		
			TOLERANCES UNLESS NOTED	NORLAND CORPORATION	A SUBSIDIARY OF CORDIS CORPORATION
			2 PL DEC ±		
			1 PL DEC ±		
			ANG ± ½°		
			FIN √		
			DRILL ALL		

3 x 74LS240 PINS 1,19 GND

ADRF-N A47
ADRE-N A46
ADRD-N A45
ADRC-N A44
ADRB-N A43
ADRA-N A42
ADR9-N A41
ADR8-N A40
ADR7-N A39
ADR6-N A38
ADR5-N A37
ADR4-N A36
ADR3-N A35
ADR2-N A34
ADR1-N A33
ADRØ-N A32
OUTPUT-N A16
MEWT-N A14
INPUT-N A15
MERD-N A13
TICK-P A8
TICKRET A9
DAT7-N A31
DAT6-N A30
DAT5-N A29
DAT4-N A28
DAT3-N A27
DAT2-N A26
DAT1-N A25
DATØ-N A24

74LS240

AB-P
AA-P (2C1, 2C2, 2B3)
A9-P (2C1, 2C2, 2B3, 2C4)
A8-P (2C1, 2C2, 2B3, 2C4)
A7-P (2C1, 2C2, 2B3, 2C4)
A6-P (2C1, 2C2, 2B3, 2C4)
A5-P (2C1, 2C2, 2B3, 2C4)
A4-P (2C1, 2C2, 2B3, 2C4)
A3-P (2C1, 2C2, 2B3, 2C4)
A2-P (2C1, 2C2, 2B3, 2C4)
A1-P (2C1, 2C2, 2B3, 2C4)
AØ-P (2C1, 2C2, 2B3, 2C4)
MEWT-P (2A4, 1C3)
MERD-P (2A1, 1C3)
TICKB-P (1C4)
DAT7-P (1A3, 1A4, 2B2, 2B3, 2B4, 2C5)
DAT6-P (1A3, 1A4, 2B2, 2B3, 2B4, 2C5)
DAT5-P (1A3, 1A4, 2B2, 2B3, 2B4, 2B5)
DAT4-P (1A3, 1A4, 2B2, 2B3, 2B4, 2B5)
DAT3-P (1A3, 1A4, 2B2, 2B3, 2B4, 2B5)
DAT2-P (1A3, 1B3, 1A4, 2B2, 2B3, 2B4, 2B5)
DAT1-P (1A3, 1B3, 1A4, 2B2, 2B3, 2B4, 2A5)
DATØ-P (1A3, 1B3, 1A4, 2B2, 2B3, 2B4, 2A5)

10K PULL UP CHIP 36

74LS510
74LS20
74LS139
74LS37
74LS14
74LS00
74LS175
74LS244
74LS74
74LS38

DRA-P (2A4)
AB8-N (2A5, 2B5)
AB4-N (2A5, 2C5)
ABØ-N (2B5, 2C5)
B2-N (2B3)
B1-N (2B1)
BØ-N (2C1)
DAT3-P (1A1)
DAT2-P (1A1)
DAT1-P (1A1)
DATØ-P (1A1)
DEFAR-P (1C5)
ON1-P
ONØ-P
MERD-P (1B1)
MEWT-P (1B1)
MAD-P (1A2)
TICKB-P (1A1)
ACK-N A17

2x74LS51
30
30
MAD-P (2C4)

1K PULL UP-CHIP 3

U3
1K
DAT7-P (1A1)
DAT6-P (1A1)
DAT5-P (1A1)
DAT4-P (1A1)
DAT3-P (1A1)
DAT2-P (1A1)
DAT1-P (1A1)
DATØ-P (1A1)

J9
DAT7-P (1A1)
DAT6-P (1A1)
DAT5-P (1A1)
DAT4-P (1A1)
DAT3-P (1A1)
DAT2-P (1A1)
DAT1-P (1A1)
DATØ-P (1A1)

A19
A20
A21
A22
A23

+5 — 1K — K
R1, R3, R4

J1 A48
J2 A50
J3 A54
J4 A55
J5 A67

J6 J7 J8 K

IN4002 CR1
LM140K-5 VR-1
+5V C1, 2, A, B
DGND C3, 4, 5, C, D, E
200µF C36
.22µF C29
10µF 20V C1, C12, C21, C25, C27
.01µF C2, C3, C5-C11, C13-C20, C22-C24, C26, C28

FOR P.C. BOARD 309D001D-B

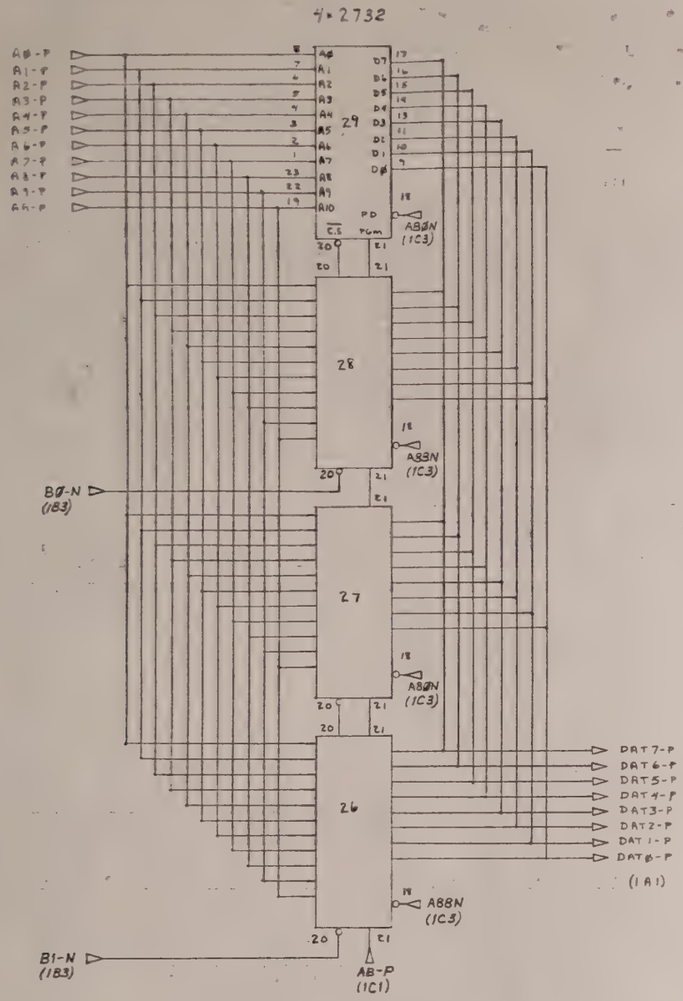
ECN NO	LETT	DATE	DESCRIPTION
3572	A	8-27-82	To Coord Rev Lev.
3586	A	9-9-82	To Coord Rev Lev
3574	A	9-9-82	PER ECN
3349	A	11-9-82	To Coord Rev Lev.
3551	A	12-16-82	PER ECN
3626 3092	A	3-19-82	COORD. REV LEVEL CPD
2714	A	4-6-81	PER ECN

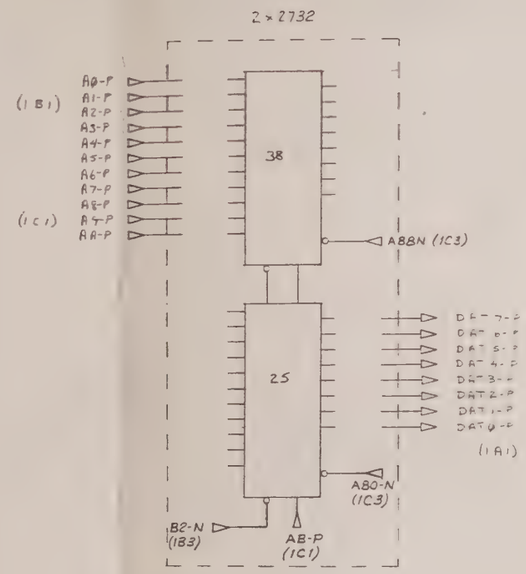
USED ON: TOL. OTHER THAN NOTED 2 PL DEC ± .01, MIN FIN 125; 3 PL DEC ± .005, MIN FIN 125; ANG ± ½°; FIN ▽; BREAK ALL SHARP CORNERS

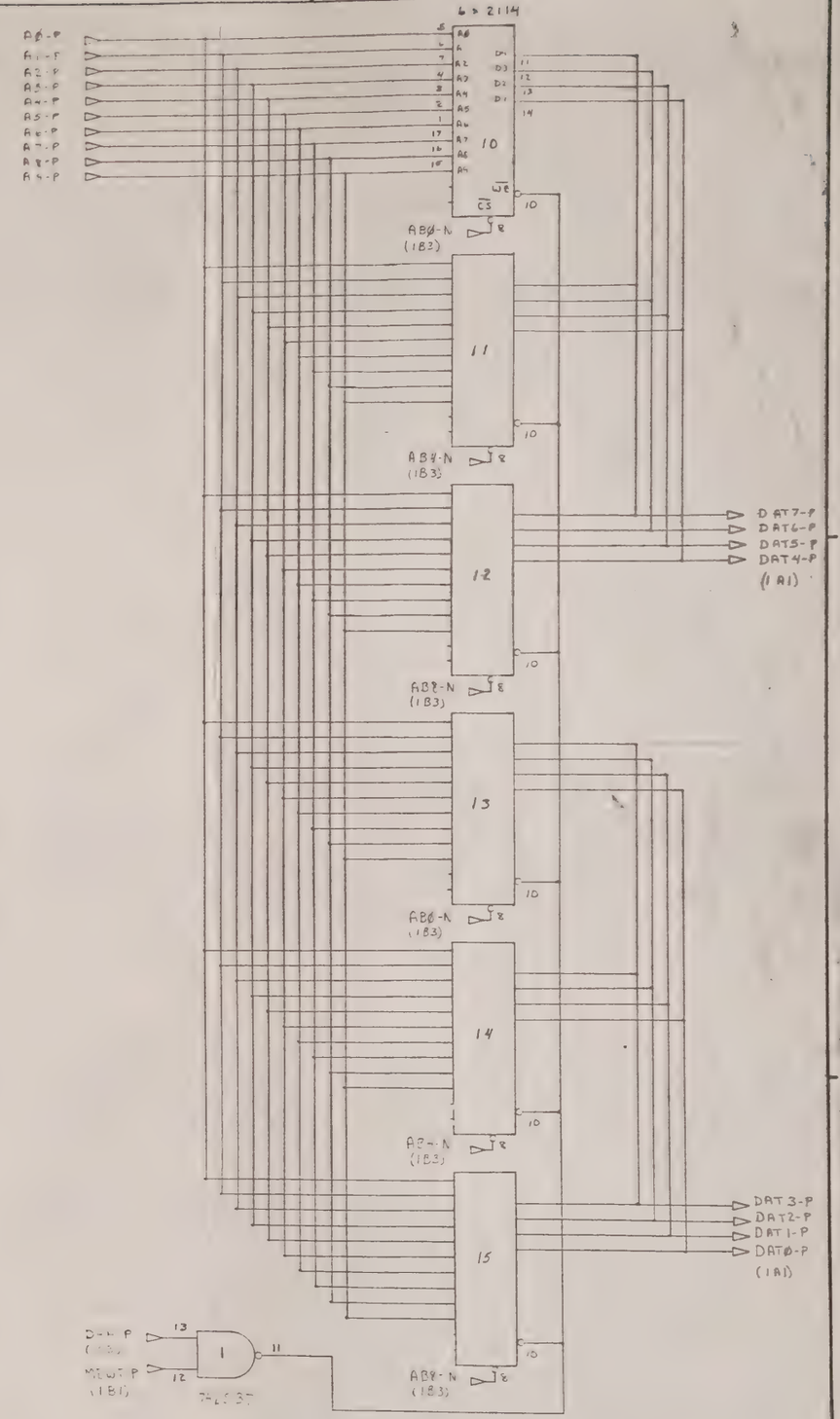
NORLAND CORPORATION — A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON WI 53538 TEL: (414) 563-8456 TELEX 26-5448

TITLE: MEMORY EXPANSION BD.

PROJECT	309			MATERIAL
DR BY	JB	DATE	11/20/80	FINISH
CK. BY	JB	SCALE		DRAWING NUMBER 309D001D REV G
DES BY	JB	Q.A.		
ENG	JB	MFG.	KAMA	SHT. 1 OF 2







ECN NO	LETT	DATE	DESCRIPTION

USED ON

FOR OTHER THAN NOTED

2 PL DEC ±1 MIN ±1

3 PL DEC ±1 MIN ±1

ANG ± ½°

FIN V

BREAK ALL SHARP CORNERS

NORLAND CORPORATION
A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON WI 53538
TEL (414) 563-8456 TELEX 26-5448

TITLE MEMORY EXPANSION BD.

PROJECT	309	MATERIAL	
DR BY	JB	DATE	11/20/80
CH BY	JB	SCALE	
DES BY	JB	Q.A.	
ENG		MFG	

DRAWING NUMBER 309B001D REV G

C B A

NORLAND CORPORATION

NUMBER 312A001D - I PAGE 1 OF 4

TITLE DATA MEMORY EXTENSION BOARD-32K

INIT BY	[illegible]	DATE	[illegible]	CH BY	[illegible]	DATE	[illegible]				
ENG	[illegible]	DATE	2/3/81	QA	[illegible]	DATE	[illegible]	MFG	[illegible]	DATE	[illegible]

REV	ECN NO	REVISION	BY	DATE	CHK'D	APP'D
A	2767 2804	RELEASED PER ECN	[illegible]	7-1-81		[illegible]
A	2855	PER ECN	[illegible]	7-29-81		[illegible]
B	2904	PER ECN	[illegible]	8-21-81		[illegible]
C	2907	PER ECN	[illegible]	8-28-81		[illegible]
D	2999	CORR. REV LEVEL	[illegible]	11-24-81		[illegible]
E	2999	ADDED 4619017 GRAY WIRE	[illegible]	[illegible]		[illegible]
F	3093	PER ECN	[illegible]	3-19-82		[illegible]
G	3168	PER ECN	[illegible]	5-17-82	[illegible]	[illegible]
H	3255	PER ECN	JGD	10-4-82		[illegible]
I	3438	PER ECN	JGD	3-21-83		

DS 033

W.O.	QTY
JOB #	DATE

PARTS LIST

NORLAND CORPORATION

NUMBER	312A001D - [illegible]	SHT	2	4

DR BY	DATE	Q.A.	DATE
JMB	5/11/91	[illegible]	8-1
ENG APPR	DATE	[illegible]	DATE
CPJ	8/3/91	[illegible]	8/3/91

NAME: DATA MEMORY EXTENSION BOARD-32K

ITEM #	PART NUMBER	QTY	DESCRIPTION	
1	312D001D	1	Board REV. B	
2	312D002B	1	Micro Code PROM A	U107
3	312D003B	1	Micro Code PROM B	U105
4	312D004B	1	Micro Code PROM C	U85
5	1002072	3	1K 5%, ¼ watt	R1, R2, R3
6	1069014	4	Resistor Pack 8 x 22 ohm	U6, U24, U42, U60
7	1359021	34	.01 mfd Ceramic	C1,C3,C5,C7,C9,C11,C13,C14,C29,C30,C46,C47,C49 C52,C55,C58,C61,C64,C68,C70,C79-C86,C89-C94
8	1359012	4	.1 mfd Ceramic	C66,C27,C78,C88
9	1409301	4	10 mfd 20V	C67, C28,C69,C87
10	1409316	2	6.8 mfd 35V	C45,C44
11	1509001	1	200 mfd 20V	C95
12	1529023	50	.1 mfd Ceramic	C2,C4,C6,C8,C10,C12,C15-C26,C31-C43,C48,C50,C51 C53,C54,C56,C57,C59,C60,C62,C63,C65,C71-C77
13	1729000	3	Diode 1N4002	CR1,CR2,CR3
14	2529015	4	74LS04	U90,U94,U97,U102
15	2529019	1	74LS08	U83
[illegible]	2529112	1	74LS153	U22
[illegible]	2529114	2	74LS139	U41,U91

ECN	REV	DATE	CHANGE	ECN	REV	DATE	CHANGE	NAME

PARTS LIST

NORLAND CORPORATION

	QTY.
	DATE

NUMBER 312A001D - [illegible] SHT 3 OF 4

DES.	DATE	APP'D	DATE
JHD	5/81	[illegible]	8/31
PROJ. ENGR.	DATE	MFG.	DATE
CDD	8/14	[illegible]	9/28

NAME: DATA MEMORY EXTENSION BOARD-32K

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	2529115	3	74LS174	U84,U104,U108
2	2529122	4	74LS138	U59,U77,U79,U87
3	2529130	1	74LS32	U103
4	2529132	1	74LS74	U111
5	2529133	2	74LS107	U89,U109
6	2529136	1	74LS148	U88
7	2529144	4	74LS163	U2,U3,U86,U106
8	2525145	3	74LS85	U80,U100,U101
9	2529150	1	74LS03	U99
10	2529151	2	74LS11	U82,U110
11	2529163	6	74LS193	U20,U21,U39,U57,U75,U95
12	2529172	8	74LS244	U5,U23,U40,U76,U78,U96,U98,U58
13	2529210	1	74LS393	U4
14	2529226	3	74LS173	U73,U92,U93
15	2529229	1	74LS86	U81
16	2529240	5	74LS374	U37,U38,U55,U56,U74
17	[illegible]	1	150 ohm 1/4 Watt 5% Resistor	

REV.	ITR	DATE	CHANGE	ECO	APP'D	DATE	CHANGE	ECN	APP'D	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

	QTY
	DATE

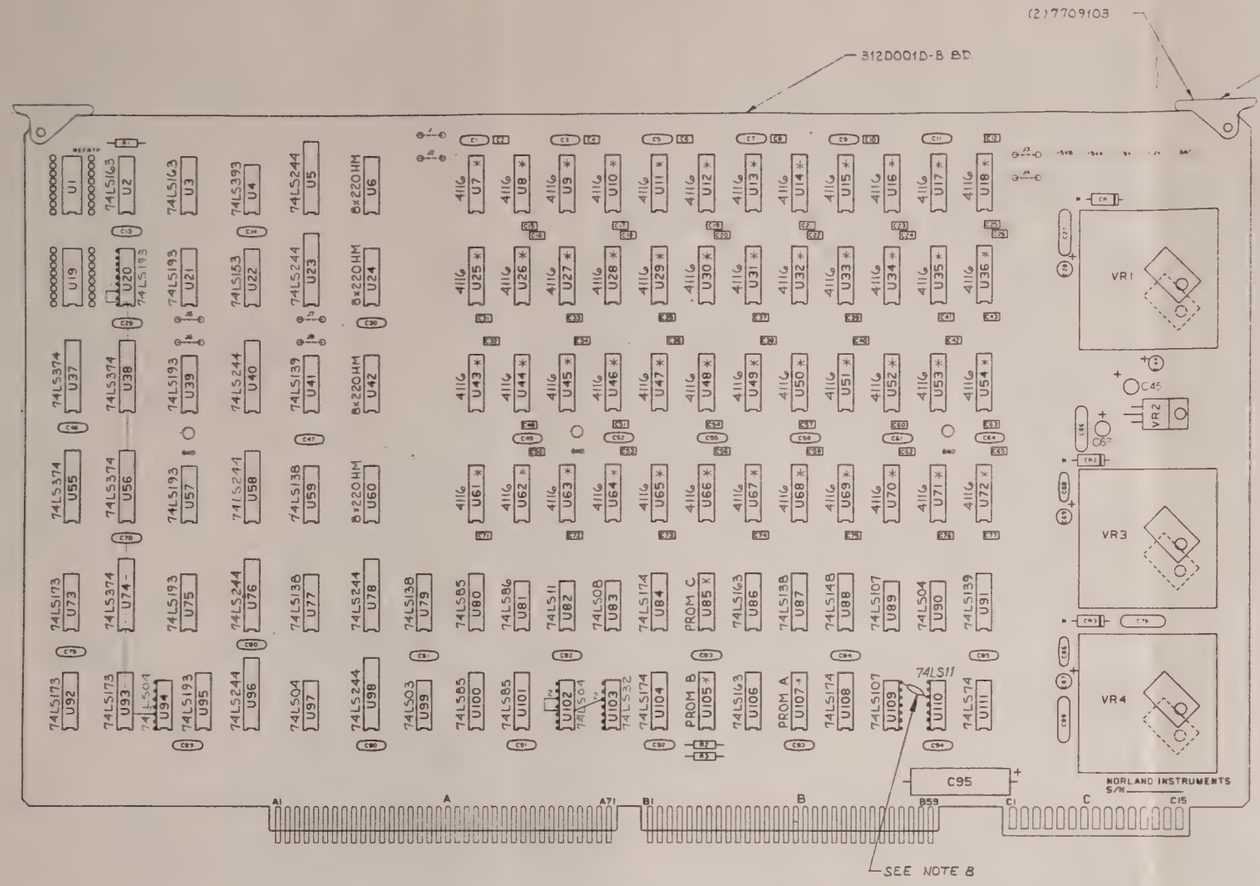
NUMBER 312A001D - 1 SHT 4 4

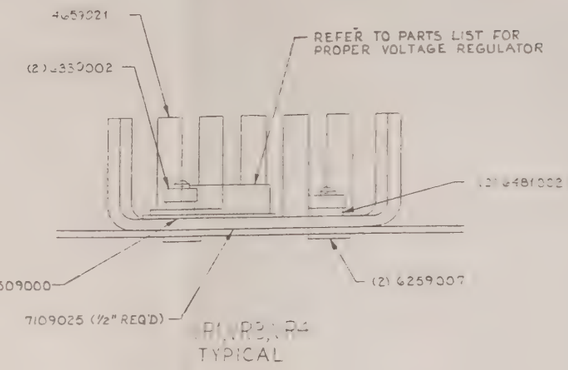
DR. By	DATE	Q.A.	DATE
JMB	5-11-81	[illegible]	8-3-81
PROJ. ENG.	DATE	MFG.	DATE
[illegible]	8/3/	[illegible]	8/3/81

NAME : DATA MEMORY EXTENSION BOARD-32K

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	3019001	1	LM340T-12 +12V Voltage Regulator	VR1
	3019005	2	LM340T-5 +5V Voltage Regulator	VR3,VR4
	3019020	1	LM320T-5.0 -5V Voltage Regulator	VR2
	3509018	51	Sockets, 16 pin dip, solder	U7-U18,U25-U36,U43-U54,U61-U72,U105,U107,U85
5	4501101	3	Cambion Terminal 160-1245-02	
6	4659021 or 4659023	3	Heat Sink IERC UP2-420CB Thermalloy 6081B-TO-220	
7	6259007	6	6-32 x .375" Pem Stud	
8	6330002	6	Nut, 6-32 Small Pattern	
9	6481002	6	#6 Lockwasher	
10	7109025	.25'	Polyester Tape	
11	7119008	1	Red Adhesive Color Dot	
12	7509000	A/R	Thermal Compound	
13	7709103	2	Board Ejector	
14	[illegible] OR [illegible]	4C	16K Dynamic RAM	U7-U18,U25-U36,U43-U54,U61-U72
15	2102018	48	16K Dynamic RAM	U7-U18, U25-U36, U43-U54, U61-U72
16	4219013	1	30 GA. SOLDER CORE WIRE	
17	1339041	1	470pf CERAMIC DISC	

ECN	REV.	DATE	CHANGE	BY	DATE	FROM	TO	DATE	ISSUE

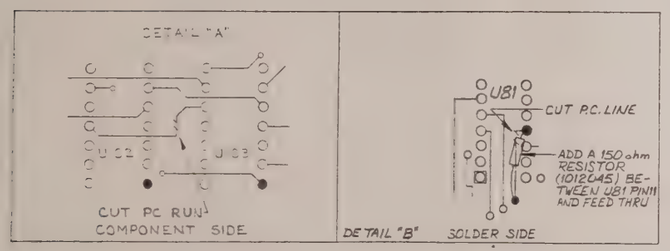




ASSEMBLY

NOTES
1) (*) DESIGNATES THE I.C.'s WHICH REQUIRE A SOCKET ASSEMBLY REFER TO THE PARTS LIST FOR THE CORRECT SOCKET ASSEMBLY
2) APPLICABLE SPECIFICATIONS-
   A SOLDER JOINT SPECIFICATION 2505002A.
   B CLEANING SPECIFICATION 2505004A
3) THE BOARD SHOULD BE CLEANED BEFORE HEAT SINKS ARE PUT ON. ONCE THERMAL COMPOUND (7509000) IS APPLIED, THE BOARD SHOULD NOT BE PUT IN THE DEGREASER
4) ADD POLYESTER TAPE (7109025) TO INSULATE THE EXTRA REGULATOR HOLES UNDER THE HEAT SINKS.
5) CUT J4
6) MAKE CUT BETWEEN U102 PIN 11 AND U103 PIN 10.
7) SCHEMATIC 312B001D-I IS TO BE USED WITH THIS ASSEMBLY.
8) ASSEMBLE A 470pf CAPACITOR (1359041) BETWEEN U109 PIN 7 AND U110 PIN 10.

AT THE ENDS OF EACH JUMPER WIRE ARE REFERENCE NUMBERS WHICH CORRESPOND TO THE NUMBERED KLUDGE WHICH FOLLOWS (USE 30 GA WIRE, 4619017):
1. U83 PIN 4 TO U94 PIN 12
2. U102 PIN 10 TO U103 PIN 9



REFER TO 312B00ID SCHEMATIC FOR THE FOLLOWING BOARD VERSIONS:

312A001D - I 32K BD.
312A005D - I 16K BD.
312A006D - I 64K BD.
312A007D - I 128K BD.

DENOTES LOCATION FOR JUMPER .5" LONG #24 AWG

DENOTES LOCATION AS ABOVE EXCEPT THAT CONNECTION IS MADE BETWEEN PADS WITH PC ON OUTER LAYER SO THAT CONNECTION MAY BE CUT

INVERTERS ARE 74LS04

DEFINED STARTING ADDRESSES - U107

MODE	BINARY	HEX	START ADDR
CHB DATA	11111	1F	1F
CHA DATA	11011	1B	1B
READ OFF	10011	13	13
READ I	01111	0F	0F
READ O	01110	0E	0E
WRITE OFF	01101	0D	0D
WRITE I	01011	0B	0B
WRITE O	01010	0A	0A
REFRESH	01001	09	09
	00111	07	07
	00011	03	03

PROGRAM

IDLE | REFR | READ BYTE 0 | READ 0* | WRITE 1* | WRITE BYTE 1 | CHAIN | CHBIN

0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F

U85: ACK, ROWSTR, COLSTR, SOURCE0, SOURCE1, SOURCE2, MEMOUT, WRITE, CLEAR, HALT

U105: INCCTR, RESET, START

0 1 2 3 4 5 6 7 8 9 A B C D E F 0 1 2 3 4 5 6 7 8 9 A B C D E F

SI U22-2	SO U27-14	U22-9	U22-7
3	16K	1MEM	H1	ADDRHI
2	16K	2MEM	CTR OE	ADDRHI
1	64K	1MEM	H1	H1
0	64K	2MEM	CTR 10	H1

3255	A	10-4-82	TO COORD REV LEV.	CPD	
3168	A	5-17-82	PER ECN	CPD	
3093	A	2-19-82	COORD. REV LEVEL	CPD	
2990	A	12-14-81	PER ECN	CPD	
2949	A	11-24-81	COORD. REV. LEV.	CPD	
2907	A	9-28-81	TO COORD. REV LEV	CPD	
2904	A	8-21-81	PER ECN	CPD	
2767 2904	A	7-30-81	PER ECN	CPD	

USED ON

TOL OTHER THAN NOTED: 2 PL DEC ±1 — MIN ±1 —; 3 PL DEC ±1 — MIN ±1 —; ANG ± ½° —; FIN √ —; BREAK ALL —

NORLAND CORPORATION — A SUBSIDIARY OF CORDIS CORPORATION, NORLAND DRIVE FORT ATKINSON WI 53538, TEL (414) 563-8456 TELEX 26-5448

TITLE: MEMORY EXTENSION BOARD - SCHEMATIC

PROJECT 312 | MATERIAL — | FINISH —

DR BY [illegible] DATE 4/14/82

CH BY CPD SCALE —

DES BY ATC Q.A. [illegible]

DRAWING NUMBER 312 B001D | REV I

312D001D-B BD

1 2 3 4

A72 PIF-N
A69 PIE-N
A70 PID-N
A67 PIC-N
A68 PIB-N
A65 PIA-N
A66 PI9-N
A63 PI8-N
A64 PI7-N
A61 PI6-N
A62 PI5-N
A59 PI4-N

37 38 73 74 55 56 92 93 LS 374
LS173
CHBDATA 1A4
CHBREQ 1C2
CHADATA 1A4
CHAREQ 1C2
MEMOUT 1B4
MEMDATAH1 1B5
MEMDATAL0 1B5
MEMIN 1A4
DATAINH1 1B5
DATAINL0 1B5
+5VB
BBUS4 BBUS5 BBUS6 BBUS7 BBUS8 BBUS9 BBUSA BBUSB BBUSC BBUSD BBUSE BBUSF
3A1
3A5

INIT 1A1
20 21 39 57 75 95 LS193
CNTRLLD 1B5
CNTRLOLD 1B5
DECCOUNT 1B5
COUNT 1B4
ENCHA 1C1
ENCHB 1C1 1A3
CWBI/O 1A3
CTR10 1A3
CTR0E 1A3
CTRHILD 1B5
CTRLOLD 1B5
+5VA
ZMEM 1A3
40 58 76 96 LS244
CNTRLDAT 1B5
CTRHIDAT 1A5
CTRLODAT 1A5
16KADDRH1 1A4
+5VB

DATAIN 1B5
DATAOUT 1B5
78 72 LS244
DAT7-N A31
DAT6-N A30
DAT5-N A29
DAT4-N A28
DAT3-N A27
DAT2-N A26
DAT1-N A25
DAT0-N A24

	J1	J2	J3	J4	J5	J6	J7	J8
16K	J			J	J		J	
32K	J			J		J	J	
64K		J	J		J			J
128K		J	J			J		J

* U76 IS USED ONLY ON 16K AND 32K MEMORY BOARDS

4 LS393
REFRREQ 1B2
REFCTR 1B5
5 LS244
ABUS7 ABUS6 ABUS5 ABUS4 ABUS3 ABUS2 ABUS1 ABUS0
3A1

VR3 SUPPLIES POWER FOR THE 64K RAM CHIPS.

C1,C2 C4,C8 2+5U
C95 200µF
C3,C4 C5,CC CD,CE A19-A23 2DGND
CR2 CR3 IN4002
LM340T-5 VR3 VR4
C78 C88 .1µF
C69 C87 10µF
.01µF
C13,C14,C29, C80,C96, C97,C68
TP3 TP2 TP6
+5VA +5VB
C70,C79,C80,C81,C82, C83,C84,C85,C86,C89, C90,C91,C92,C93,C94
MOUNT THESE REGULATORS ON HEAT SINKS

C9,C1 2+15U
CR1 IN4002
LM340T-12 VR1
C66 6.8µF
C88 10µF
C27 .1µF
TP5 +12V
MOUNT THIS REGULATOR ON A HEAT SINK THIS REGULATOR MAY BE USED FOR ADDITIONAL +5V MEMORY POWER ON A 128K BOARD. AN LM340T-5 SHOULD BE USED IN THIS CASE.

C8,C4 -5U
LM320T-5 VR2
C95 6.8µF
C87 10µF
C66 .1µF
0.1µF
TP4 -5V
C15,C17,C19,C21,C23,C25 C31,C33,C35,C37,C39,C41, C43,C48,C51,C54,C57,C60 C63,C71,C72,C73,C74,C75, C76,C77

TP7 TP8 TP9

DECOUPLE +5V TO GROUND WITH .01µF AT EVERY THIRD DEVICE (EXCEPT MEMORY ARRAY)

312D00D-B BD

USED ON
TOL OTHER THAN NOTED
2 PL DEC ± 1 MM ± 1
3 PL DEC ± 1 MM ± 1
ANG ± ½°
FIN √
BREAK ALL SHARP

NORLAND CORPORATION
A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON WI 53538
TEL 1414 563 8456 TELEX 26 5448

TITLE MEMORY EXTENSION BOARD - SCHEMATIC

PROJECT 312		MATERIAL —	
DR BY [illegible]	DATE 4/14/8.	FINISH —	
CH BY CDJ	SCALE	DRAWING NUMBER 312B001D	REV I
DES BY ATE CORP	D.A.		

ECN NO | LETT | DATE | DESCRIPTION

THIS RUN MAY BE CUT TO SEPARATE THE V_{DD} PLANE SO THAT IT CAN BE SUPPLIED BY TWO REGULATORS

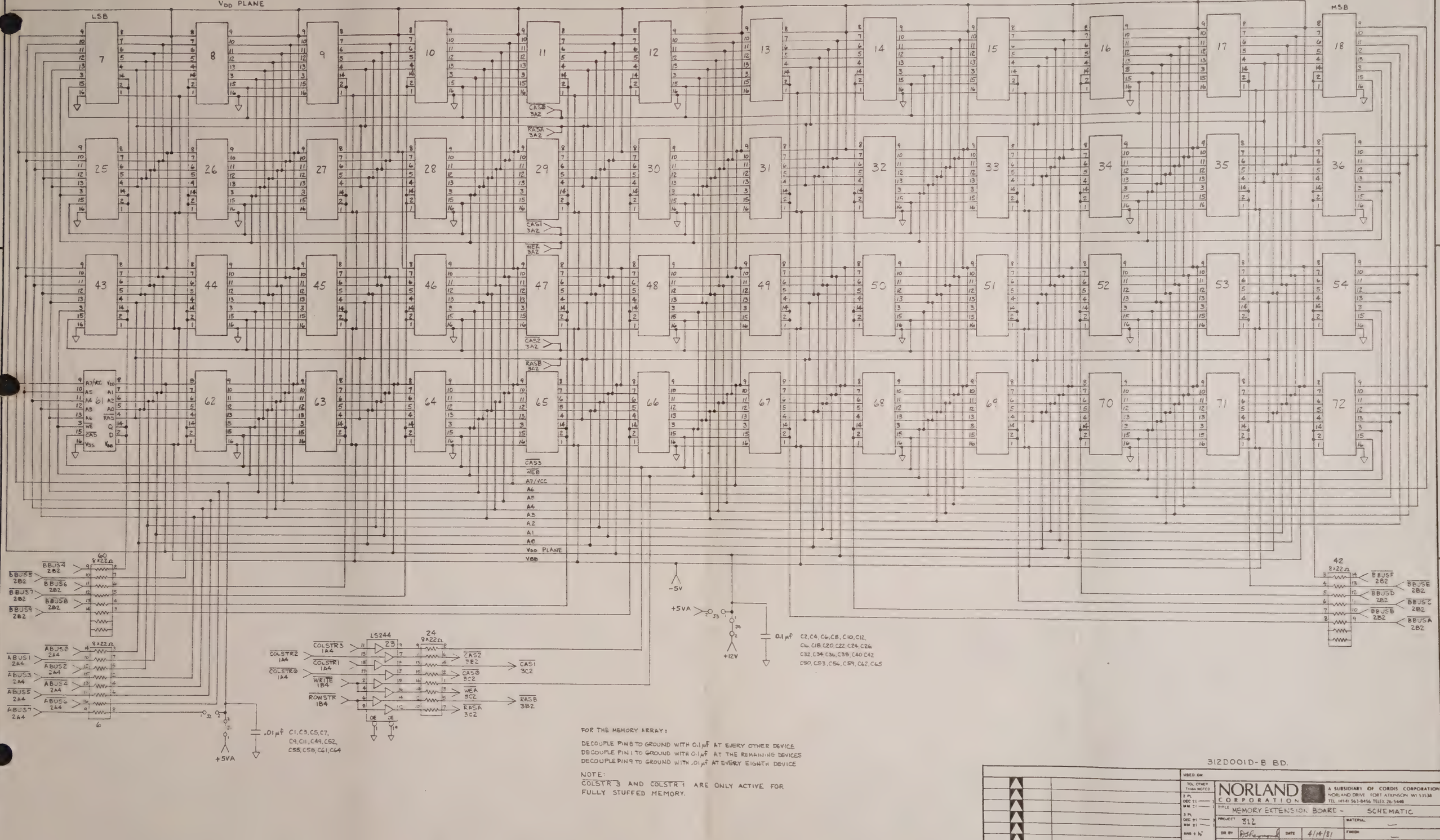
MEMORY ARRAY

48 x 4116-4

V_{DD} PLANE

LSB

MSB



FOR THE MEMORY ARRAY:

DECOUPLE PIN 8 TO GROUND WITH 0.1 μf AT EVERY OTHER DEVICE
DECOUPLE PIN 1 TO GROUND WITH 0.1 μf AT THE REMAINING DEVICES
DECOUPLE PIN 9 TO GROUND WITH .01 μf AT EVERY EIGHTH DEVICE

NOTE:
$\overline{\text{COLSTR 3}}$ AND $\overline{\text{COLSTR 1}}$ ARE ONLY ACTIVE FOR FULLY STUFFED MEMORY.

312D001D-B BD.

USED ON

TOL. OTHER THAN NOTED
2 PL DEC ± |
MM ± |
3 PL DEC ± |
MM ± |
ANG ± ½°
FIN √

NORLAND CORPORATION
A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON WI 53538
TEL (414) 563-8456 TELEX 26-5448

TITLE MEMORY EXTENSION BOARD - SCHEMATIC

PROJECT	312	MATERIAL	—
DR BY	[illegible]	DATE	4/14/81
CK BY	CDB	SCALE	N.T.S
DES BY	ATC	DRAWING NUMBER	312B001D
		REV	F

NORLAND CORPORATION

NUMBER 312A007D-I PAGE 1 OF 4

TITLE DATA MEMORY EXTENSION BOARD - 128K

INIT BY		DATE		CH BY		DATE					
ENG		DATE		QA		DATE		MFG		DATE	

REV	ECN NO	REVISION	BY	DATE	CHK'D	APP'D
A	2767 2804	RELEASED PER ECN	PCP	7-24-81		CPD
A	2855	PER ECN	PCP	7-29-81		CPD
B	2901	PER ECN	PCP	8-1-81		
	2907	TO COORD. REV. LEV.				
D	2999	COORD. REV. LEVEL				
E	2999	ADDED 4619017 GRAY WIRE				
F	3093	PER ECN				
G	3168	PER ECN				
H	3255	PER ECN	JGD			
I	3438	PER ECN	JGD			

DS 03

PARTS LIST

NORLAND CORPORATION

P.O.	QTY.
	DATE

NUMBER 312A007D - I		SHT 2	4
DR BY	DATE	CK'D	DATE
JMB	5/12/81		8/2/81
PROJ ENG	DATE	MFG	DATE
CFJ	5/3/81		8/2/81

NAME: DATA MEMORY EXTENSION BOARD-128K

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	312D001D	1	Board REV. B	
2	312D002	1	Micro Code PROM A	U107
3	312D003B	1	Micro Code PROM B	U105
4	312D004B	1	Micro Code PROM C	U85
5	1002072	3	1K 5% ¼ watt	R1,R2,R3
6	1069014	4	Resistor Pack 8 x 22 ohm	U6,U24,U42,U60
7	1359012	2	.1 mfd Ceramic	C78,C88
8	1359021	22	.01 mfd Ceramic	C13,C14,C29,C30,C46,C47,C68,C70,C79-C86,C89-C94
9	1409301	2	10 mfd 20V	C69,C87
10	1509001	1	200 mfd 20V	C95
11	1529023	24	.1 mfd Ceramic	C2,C4,C6,C8,C10,C12,C16,C18,C20,C22,C24,C26,C32, C34,C36,C38,C40,C42,C50,C53,C56,C59,C62,C65
12	1729000	2	Diode 1N4002	CR2,CR3
13	2529015	4	74LS04	U90,U94,U97,U102
14	2529019	1	74LS08	U83
15	2529112	1	74LS153	U22
16	2529114	2	74LS139	U41,U91
17	2529115	3	74LS174	U84,U104,U108

PARTS LIST

NORLAND CORPORATION

NUMBER 312A007D - I SHT 3 OF

DES'G	DATE	C.A.	DATE
JrB	5/12/81	[illegible]	8-3-81
PROJ. ENG.	DATE	MFG	DATE
CPD	5/8	[illegible]	5/15

TITLE: DATA MEMORY EXTENSION BOARD-128K

ITEM	PART NUMBER	QTY.	DESCRIPTION	
	2529122	4	74LS138	U59,U77,U79,U87
	2529130	1	74LS32	U103
	2529132	1	74LS74	U111
	2529133	2	74LS107	U89,U109
	2529136	1	74LS148	U88
	2529144	4	74LS163	U2,U3,U86,U106
	2529145	3	74LS85	U80,U100,U101
	2529150	1	74LS03	U99
	2529151	2	74LS11	U82,U110
	2529163	6	74LS193	U20,U21,U39,U57,U75,U95
	2529172	7	74LS244	U5,U23,U40,U58,U78,U96,U98
	2529210	1	74LS393	U4
	2529226	3	74LS173	U73,U92,U93
	2529229	1	74LS86	U81
	2529240	5	74LS374	U37,U38,U55,U56,U74
	3019005	2	LM340T-5 +5V Voltage Regulator	VR3,VR4
	3509018	51	Sockets, 16 Pin Dip, Solder	U7-U18,U25-U36,U43-U54,U61-U72,U85,U105,U107

ITEM	ECA	REV	DATE	CHANGE	ECA	BY

PARTS LIST

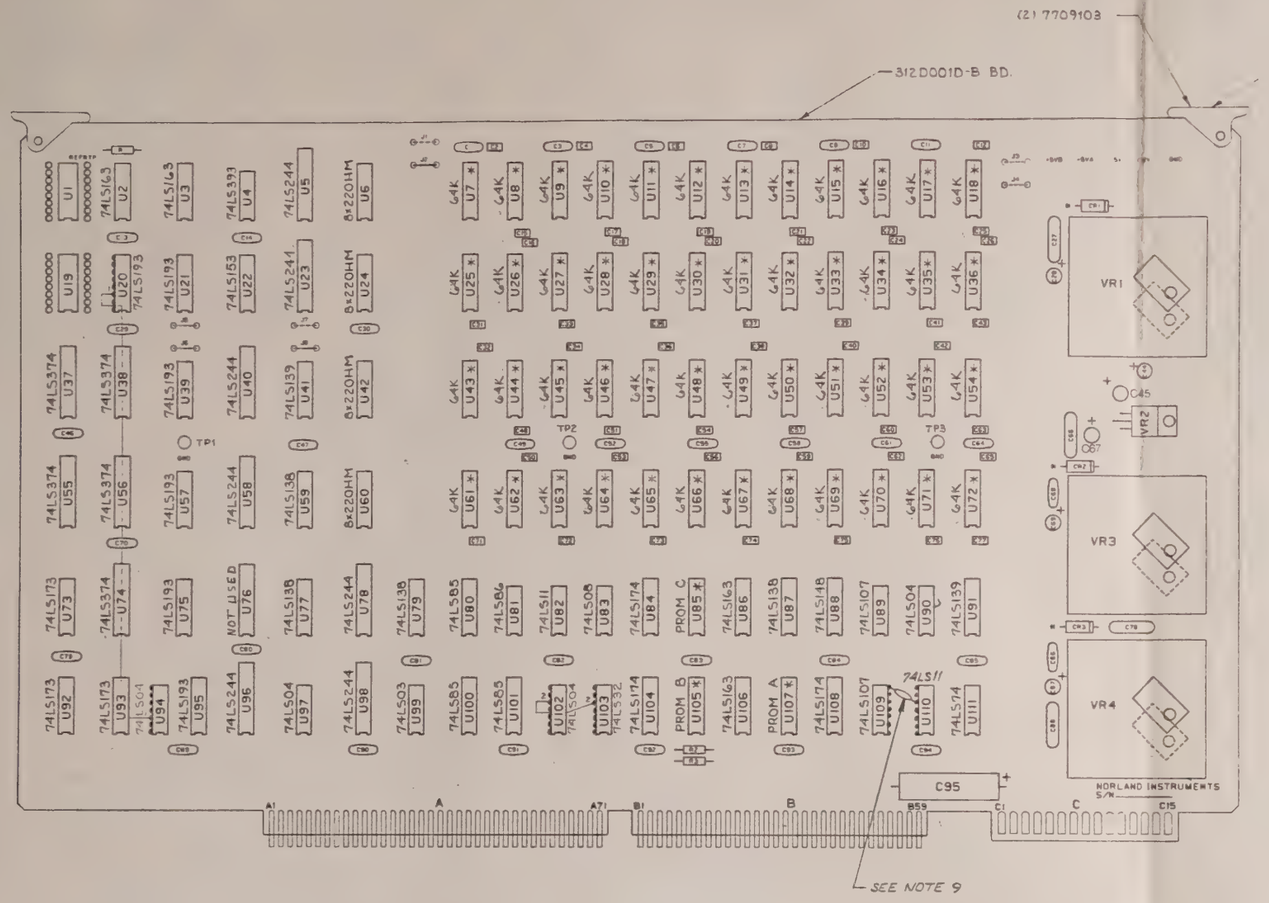
NORLAND CORPORATION

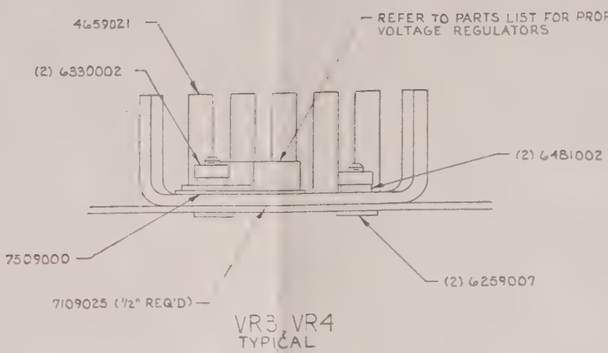
NUMBER	312A007D	I	SHT	4
DR BY	DATE	C A	DATE
JMB	8/26/81	[illegible]	9-2-81
PROJ. ENG.	DATE	MFG	DATE
CPD	8/31/81	[illegible]	9/3/81

NAME: DATA MEMORY EXTENSION BOARD-128K

ITEM #	PART NUMBER	QTY	DESCRIPTION
1	4501101	3	Cambion Terminal 160-1245-02
2	4659021 or	2	Heat Sink IERC UP2-420CB
	4659023		Thermalloy 6081B-TO-220
3	6259007	4	6-32 x .375" Pem Stud
4	6330002	4	Nut, 6-32 Small Pattern
5	6481002	4	#6 Lockwasher
6	7109025	.16'	Polyester Tape
7	7119008	1	Red Adhesive Color Dot
8	7509000		Thermal Compound
9	7709103	2	Board Ejector
10	2629049	48	64K DYNAMIC RAM U7-U18,U25-U36,U43-U54,U61-U72
11	4619017	.7'	30 GA. SLATE GRAY WIRE
12	1012045 OR	1	150 Ω 1/4 WATT 5% RESISTOR
	1002052		
13	1359041	1	270 pF CERAMIC CAPACITOR
14			
15			
16			

NO.	QUANTITY	BOM	MFG	DATE	CHANGE	ECN	REV	DATE	CHANGE

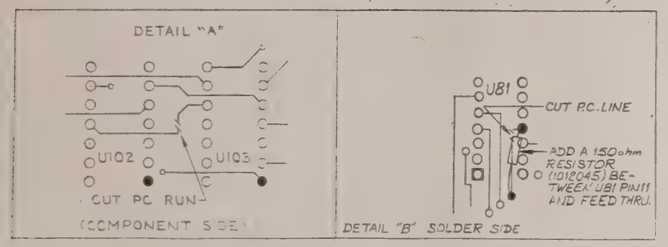




ASSEMBLY

NOTES:
1) USE 30 GA. WIRE (4619017) TO JUMPER J2 AND J8. CUT JUMPERS J1, J4 & J7.
2) APPLICABLE SPECIFICATIONS-
   A) SOLDER JOINT SPECIFICATION 2505002A.
   B) CLEANING SPECIFICATION 2505004A.
3) THE BOARD SHOULD BE CLEANED BEFORE HEAT SINKS ARE PUT ON. ONCE THERMAL COMPOUND (7509000) IS APPLIED, THE BOARD SHOULD NOT BE PUT IN THE DEGREASER.
4) ADD POLYESTER TAPE (7109025) TO INSULATE THE EXTRA REGULATOR HOLES UNDER THE HEAT SINKS.
5) (*) DESIGNATES THE I.C.'s WHICH REQUIRE A SOCKET ASSEMBLY. REFER TO THE PARTS LIST FOR THE CORRECT SOCKET ASSEMBLY.
6) SCHEMATIC 312B001D-I TO BE USED WITH THIS ASSEMBLY.
7) LEAVE THE FOLLOWING COMPONENT LOCATIONS EMPTY; C1, C3, C5, C7, C9, C11, C15, C17, C19, C21, C23, C25, C27, C28, C31, C33, C35, C37, C39, C41, C43, C44, C45, C48, C49, C51, C52, C54, C55, C57, C58, C60, C61, C63, C64, C66, C67, C71-C77, CR1, VR1, VR2 & U76.
8) MAKE CUT BETWEEN U102 PIN 11 AND U103 PIN 10. (SEE DETAIL "A").
9) ASSEMBLE A 470pf CAPACITOR (1359041) BETWEEN U109 PIN 7 AND U110 PIN 10.

AT THE END OF EACH JUMPER WIRE ARE REFERENCE NUMBERS WHICH CORRESPOND TO THE NUMBERED BRIDGE WHICH FOLLOWS (30 GA. WIRE, 4619017):
1) J2 PIN 4 TO J4 PIN 12
2) U102 PIN 10 TO U103 PIN 6



NORLAND CORPORATION — A SUBSIDIARY OF CORDIS CORPORATION

DATA MEMORY EXTENSION BD. 128K

312 — NOTED

DR BY: J. ZENER — DATE: 8-7-81

CH BY: — DATE: N/S

DES BY: — DATE:

312A007D

NORLAND CORPORATION

NUMBER 312A012C-B PAGE 1 OF 3

TITLE SERIAL SWITCH/TRIGGER DELAY BOARD

INIT BY	[illegible]	DATE	8-5-81	CH BY	[illegible]	DATE	[illegible]				
ENG	[illegible]	DATE	8/10/81	QA	[illegible]	DATE	[illegible]	MFG	[illegible]	DATE	8/10/81

REV	ECN NO	REVISION	BY	DATE	CHK'D	APP'D
A	3361	PER ECN	JGD	1-4-82		
B	3429	PER ECN	JGD	2-14-82		

DS 052

PARTS LIST

NORLAND CORPORATION

MFG	QTY
CE#	DATE

NUMBER 312A012C-B IT 2 3

DR BY	DATE	Q.A.	DATE
P. Pugsley	8-5-81	[signature]	8/10/81
PROJ ENG.	DATE	MFG.	DATE
CDV	8/6/81 [signature]		8/10/81

NAME: SERIAL SWITCH/TRIGGER DELAY BOARD

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
	1002040	1	47 Ω 1/4 watt 5% Fixed Carbon Resistor	R5
	1002074	3	1K2 1/4 Watt 5% Fixed Carbon Resistor	R1,R4,R3
	1002086	1	3K9 1/4 Watt 5% Fixed Carbon Resistor	R2
	1069002	1	1K-15 16 Pin Fixed Network Resistor	U8
	1359021	3	.01 mfd 50V Ceramic Capacitor	C2,C3,C4
	1409301	1	10 mfd 20V 10% Capacitor	C1
	1749000	2	1N914 Diode, Silicon, Switching	CR2,CR3
	2529102	1	74S08 Digital, TTL Integrated Circuit	U1
	2529144	1	74LS163	U7
	2529127	3	74LS190	U4,U5,U6
	2529124	1	74LS02	U2
	2529123	1	74LS00	U3
	312D012C	1	DMX/Switch Board	
	3759004	1	2N5172	Q1
	4219055	2	Dip Relay	K1,K2
	4509657	2	Solder Lug	
	4548006	1.35'	1/8" Clear Heat Shrink Tubing	

ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE

PARTS LIST

NORLAND CORPORATION

W.O. #	QTY.
JOB #	DATE

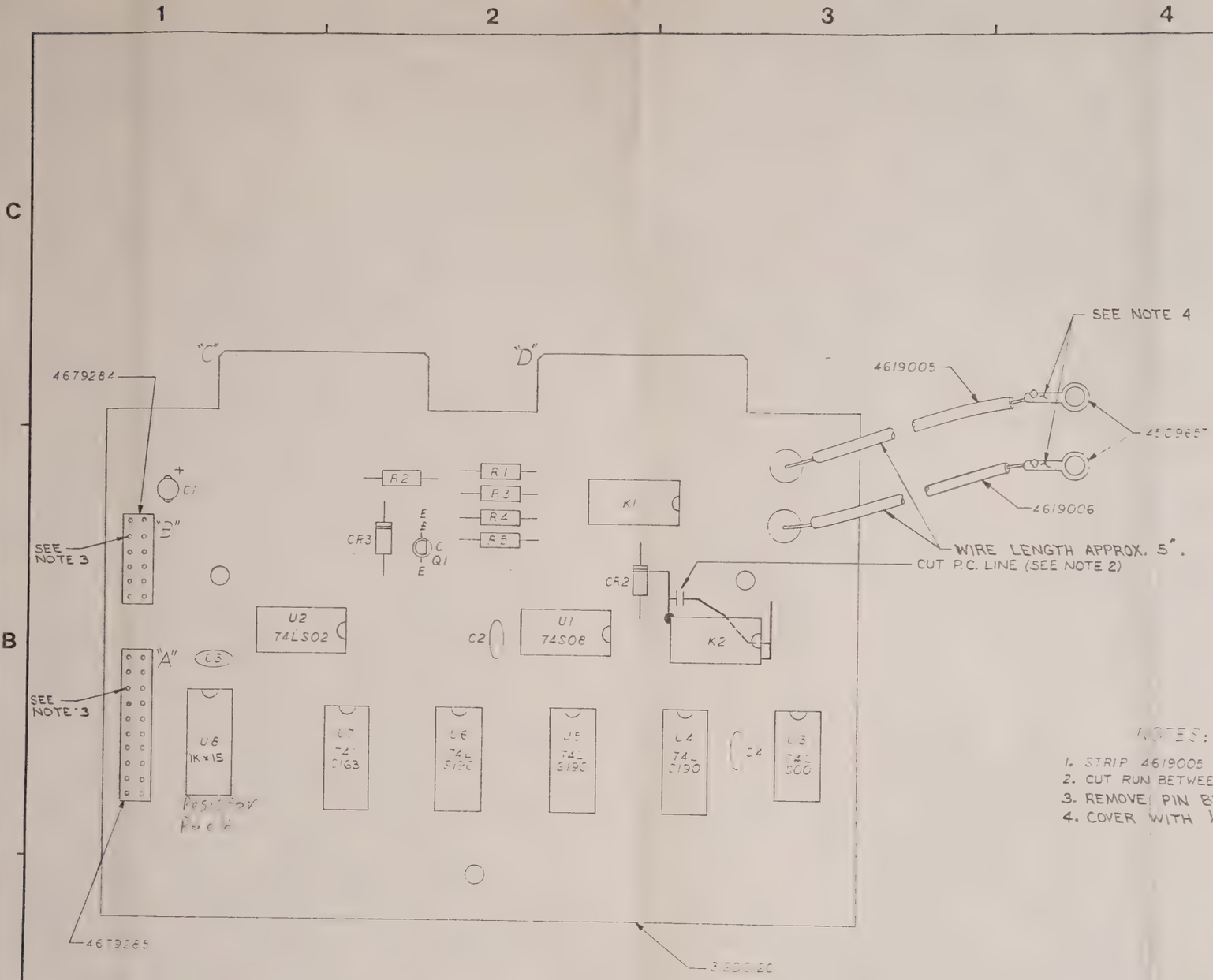
ISSUE DATE

NUMBER	312A012C-B	SH. 3 OF 3	
DE BY	DATE	Q.A.	DATE
P.Page	8-5-81	[illegible]	8/10/81
PROJ. ENG.	DATE	MFG	DATE
[illegible]	[illegible]	[illegible]	8/10/81

SERIAL SWITCH/TRIGGER DELAY BOARD

ITEM #	PART NUMBER	QTY.	DESCRIPTION
1	4619005	.6'	22 Gauge Red wire
	4619006	.6'	22 Gauge White Wire
3	4679284	1	12 Pin Header Connector, Male
	4679285	1	20 Pin Header Connector, Male
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			

ITEM	REV	DATE	CHANGE	ECN	ECO	DATE	CHANGE	BY	CHK	APP	REMARKS



NOTES:

1. STRIP 4619005 & 4619006 .125" BOTH ENDS.
2. CUT RUN BETWEEN K2 PIN 7 AND K2 PIN 14.
3. REMOVE PIN BEFORE INSTALLING CONNECTOR.
4. COVER WITH ½" CLEAR HEAT SHRINK TUBING (4548006)

ECN NO	LETT	DATE	DESCRIPTION
5469	A	1483	To Coord Rev Ltr
5560	B	4-88	Per ECN

USED ON

NORLAND CORPORATION
A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON WI 53538
TEL (414) 563-8456 TELEX 26-5448

TITLE SER A SW TCH TR FOR DELAY BD ASSY

PROJECT		MATERIAL	
DR BY	E.W.D.	DATE	4-28-83
CH BY		SCALE	3/1
DES BY		QA	
ENG		MFG	
FINISH			

DRAWING NUMBER 312AD12C REV B
SHT 1 OF SHTS

TOLERANCES UNLESS OTHERWISE NOTED
2 PL DEC ± MM ±
3 PL DEC ± MM ±
ANG ± ½°
FIN V
BREAK ALL SHARP CORNERS

on Power uP, K1 and K2 are in Floppy Position (7,8 to 14)

Print / Print will set K1 and K2 to Print Position

Signals - Floppy

K1 Pin 7

+ & - 8V swing when accessing drive.

idle: -8V w/disk drive connected.
-9V w/disk drive disconnected.

K2 Pin 7

+ & - 12V swing when accessed

idle: -12V w/disk drive connected
0V w/disk drive disconnected

Printer output checks only the RD Path and K1 Pin 7 to 1 connection.

RS-232 SWITCH INPUT CABLE

RS-232 SWITCH OUTPUT CABLE

CLTS MBR6-7

RD MBR6-11 TO CPU 3C5

ID MBR6-13 To CPU 3C6

PG MBR6-15

Serial out

Data IN

2DGND

UNREG +5V

47 Ω R5

2N5172

IN914 CR3

3K9 R2

CR2 IN914

K1 K2

1K2 R4 1K2 R3 1K2 R1

D20 D22 D26 D24 D12 D16 D14 D5 D3 D1

SIO5 PRINT CLTS
SIO6 PRINT DIR
SIO8 PRINT RLSD
SIO7 PRINT SG
SIO1 PRINT PD
SIO3 PRINT RD
SIO2 PRINT XD
FD3 FLOPPY RD
FD2 FLOPPY XD
FD1 FLOPPY PG

LOAD-N B3
LOAD RET B4
ENP RET B2
ENP-P B1
ENT-P B7
ENT RET B8
TCKB-N B5
TCKB RET B6

74LS02 U2 74LS00 U3 74S08 U1 74LS163 U7 74LS190 U6 74LS190 U5 74LS190 U4

U8-13 U8-14 U8-10 U8-7 1KX4
U8-4 U8-3 U8-11 U8-6 1KX4
U8-5 U8-12 U8-8 U8-9 1KX4
U8-1 U8-15 U8-2 1KX3

B9 CO-P
B12 CO RET

1/1-P A10 1/2-P A12 1/4-P A4 1/8-P A3
10/1-P A9 10/2-P A11 10/4-P A6 10/8-P A5
100/1-P A7 100/2-P A8 100/4-P A1 100/8-P A2
8/1-P A13 8/2-P A14 8/4-P A15

+5V SW RET. A19

FRONT PANEL SWITCH

ECN NO	LETT	DATE	DESCRIPTION
3429	B	2-14-83	To Coord. Rev. Lev.
3032	A	1-14-82	Per ECN RAP

USED ON

TOL OTHER THAN NOTED
2 PL DEC ±[illegible]
MM ±[illegible]
3 PL DEC ±[illegible]
MM ±[illegible]
ANG ± ½°
FIN √

BREAK ALL SHARP CORNERS

NORLAND CORPORATION
A SUBSIDIARY OF CORDIS CORPORATION
NORLAND DRIVE FORT ATKINSON, WI 53538
TEL (414) 563-8456 TELEX 26-5448

TITLE SERIAL SWITCH/TRIGGER DELAY BOARD

PROJECT	312			MATERIAL
DR BY	CPD	DATE	6/22/81	FINISH
CH. BY	CPD	SCALE	NTS	DRAWING NUMBER 312B012C REV. B
DES BY	CPD	Q.A.		
ENG	CPD	MFG.		SHT. 1 OF 1 SHTS

NORLAND CORPORATION

NUMBER 312A014D - PAGE 1 OF 7

TITLE TIME BASE MODIFIED BOARD ASSEMBLY

INIT BY		DATE	8-5-81	CH BY		DATE					
ENG		DATE		QA		DATE		MFG		DATE	

REV.	ECN NO.	REVISION	BY	DATE	CHK'D	APP'D
A	-	RELEASED CHANGED WIRE CHART				
B	3093	PER ECN				
C	3312	PER ECN	JMB	10/7/82		
D	3364	PER ECN	JGD			
E	3556	PER ECN	JGD			
F	3746	PER ECN				
G	3907	PER ECN	TKW	12-3-84		

DS 032

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

QTY.
DATE

NUMBER	312A014D-G	SHT 2 OF
DR. BY	DATE	Q. A.
PP	8-5-8	

NAME: TIME BASE MODIFIED

ITEM NO.	PART NUMBER	QTY.	DESCRIPTION	
1	208D005D	1	Printed Circuit Board Rdv. D (Use Drilling Detail 208D005D-1)	
2	1002024	3	10 ohm 1/4 watt 5% Carbon Resistor	R20,R23,R24
3	1002048	2	100 ohm	R3,R18
4	1002060	6	330 ohm	R6,R12,R13,R14,R15,R25
5	1002065	1	510 ohm	R26
6	1002067	1	620 ohm	R5
7	1002072	5	1K ohm	R2,R7,R8,R4,R30
8	1002076	2	1.5K	R16,R17
9	1002079	1	2K	R21
10	1002084	1	3.3K	R29
11	1002096 or 1007096	1	10K	R1
12	1002120	2	100K	R9,R11
13	1002144	1	1 Meg	R22
14	1002234	2	27 ohm 1/2 watt Carbon Resistor	R27,R28
15	1002505	1	24K 1 watt	R19
16	1002641	1	51 ohm 2 watt	R10
17	1079000	2	1K Resistor Package LDP14-02-102G	U25,U68

PLN	REV.	DATE	CHANGE	ECN	REV.	DATE	CHANGE

ECN	REV.	DATE	CHANGE

NORLAND CORPORATION

NUMBER	312A014D - G	SHT 3
DR. BY	DATE	Q. A.	DATE
P. Payne	8-5-81		
C P D	Fitzgibbons	8/10/81	

TIME BASE MODIFIED

ITEM NO.	PART NUMBER	QTY.	DESCRIPTION	
1	1359004	1	100 pf @ 1KV	C8
2	1359021	62	.01 mfd Sprague Type 3C or Ultrakap	C3,C5,C6,C10,C11,C12,C14,C16,C17,C18,C22,C23,C26 C31 thru C78,C25
3	1379031	1	1000 pf	C21
4	1359035	1	10 pf @ 1KV	C20
5	1359041	1	470 pf @ 1KV	C7
6	1409315	4	5.6 mfd @ 35V Sprague 196D565X9035KA1 or Equiv.	C24,C27,C28,C30
7	1409301	4	10 mfd @ 20V Kemet T368B106K020AS	C2,C13,C19,C29
8	1509001	1	200 mfd @ 25V CDE Type NLW200-25	C1
9	1529035 or	2	.22 mfd @ 50V Capacitor -20+80%	C4,C15
	1529024	2	.22 mfd @ 50V 20%	
10	1729000	6	1N4002	CR2,CR6,CR9,CR11,CR14,CR16
11	1749000	9	1N914	CR3,CR4,CR7,CR8,CR13,CR17,CR18,CR19,CR20
12	1749005	1	Diode Varo VSK 120	CR12
13	2529008	3	74S00	U38,U35,U5
14	2529011	1	74S02	U51
15	2529014	3	74S04	U18,U50,U62
16	2529015	5	74LS04	U23,U48,U55,U66,U67
17	2529019	6	74LS08	U16,U24,U41,U52,U60,U77

ECN	REV	DATE	CHANGE	ECN	BY	DATE	CHANGE	ECN	REV

QTY.

DATE

PART LIST

NORLAND CORPORATION

312A014D G

4

P. Pugen 8-5-81

NAME: TIME BASE MODIFIED

ITEM NO.	PART NUMBER	QTY.	DESCRIPTION	
1	2429024	1	74LS10	U63
2	2529042	1	74S51	U72
3	2529048	4	74S112	U17,U36,U71,U80
4	2529051	1	74120	U33
5	2529055	1	74S133	U28
6	2529059	1	74S140	U79
7	2529091	1	74S11	U8
8	2529100	1	8T13 (75121)	U89
9	2529101	1	8T14 (75122)	U53
10	2529102	1	74S08	U11
11	2529103	1	74S163	U30
12	2529115	2	74LS174	U29,U49
13	2529116	1	74LS175	U85
14	2529122	1	74LS138	U81
15	2529123 or	4	74LS00	U7,U13,U22,U46
	2529007		7400	
16	2529124	1	74LS02	U27

REV.	DATE

NORLAND

NUMBER	312A014D-G	SHT	5
DR. BY	DATE	Q. A.	DATE
P. Pugs	8-5-81		

TIME BASE MODIFIED

ITEM	NUMBER	QTY.	DESCRIPTION	
1	2529127	1	74LS20	U10
2	2529128	1	74LS27	U65
3	2529130	2	74LS32	U64, U82
4	2529132	3	74LS74	U26, U45, U54
5	2529133	3	74LS107	U4, U15, U19
6	2529134	1	74LS125	U43
7	2529136	1	74LS148	U9
8	2529143	1	74LS164	U3
9	2529144	4	74LS163	U31, U32, U69, U70
10	2529155	1	74LS38	U88
11	2529159	2	74LS157	U86, U87
12	2529160	10	74LS162	U1, U2, U20, U21, U39, U40, U58, U59, U75, U76
13	2529165	2	74LS251	U61, U78
14	2529173	2	74LS257	U83, U84
15	2529176	1	74S32	U12
16	3009005	1	741C	U57
17	3009015	1	LM311	U56

PARTS LIST

NORLAND CORPORATION

ISSUE DATE:

QTY.
DATE

NUMBER 312A014D G SHT 6

DR BY	DATE	CK'D	DATE
P. Ruger	8-5-81		8-11-81
PROJ. ENG.	DATE	MFG.	DATE
	8/6/81		8/10/81

NAME: TIME BASE MODIFIED

ITEM #	PART NUMBER	QTY.	DESCRIPTION	
1	3009209	2	CA3100	U73,U74
2	3019005	2	LM340T-5	VRA,VRB
3	3019006 or	1	LM320H-15 To 5 Case	VRD
	3019027	1	79M15	
4	3019008	1	78L15 To-39 Case	VRC
5	4219061	3	Reed Relay	K1,K2,K3
6	4501101	3	Terminal Post	
7	4569000	2	Buss Bars	
8	4569001	1	Buss Bar	
9	4619017	6.2'	30 ga. Wire (Slate Grey)	
10	4659021 or	2	Heat Sink Wakefield 689.75-4 or I.E.R.C. UP2-420-CB	
	4659023		Thermalloy 6081B-TO-220	
11	4689026	2	Augat Pins	J3
12	4839000	2	Insulators	VRC,VRD
13	6259007	4	#6-32 Pem Stud	
14	6330002	4	#6 Small Pattern Nut	
15	6481002	4	#6 Lockwasher	
16	7119007	2	Brown Color Dot	
17	7509000	1	Thermal Compound	

DR BY	DATE	CHANGE	CK'D	REV.	DATE	CHANGE

PARTS LIST

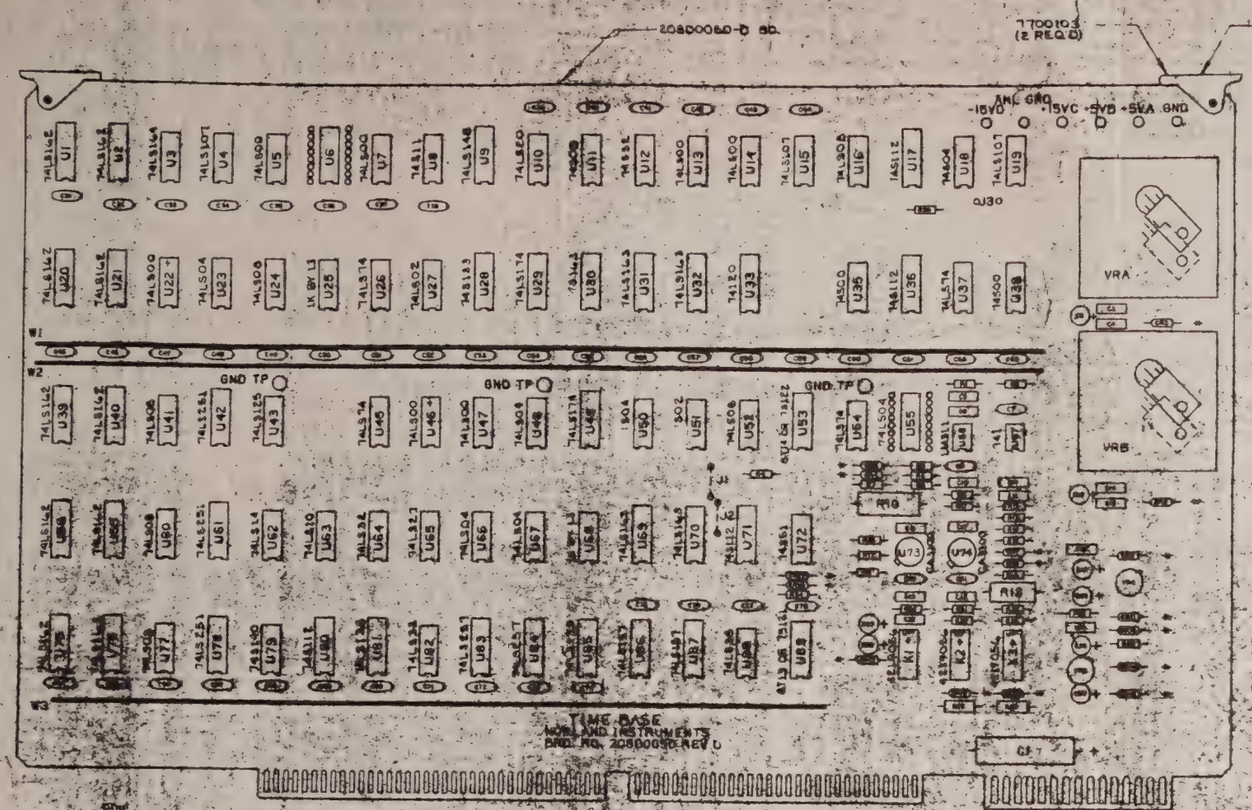
NORLAND

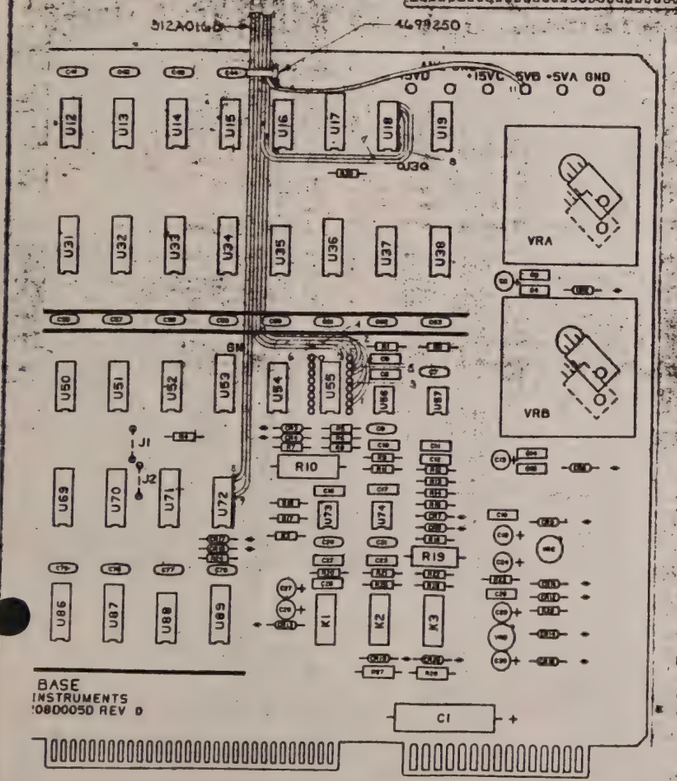
312A014D - G

7

TIME BASE MODIFIED

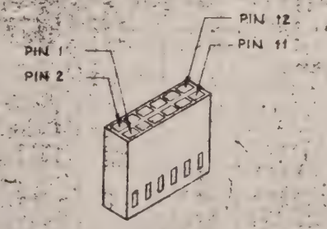
7700103	2	Card Ejectors w/pins S-203	
7109025	.09'	Polyester Tape (1/2" wd.)	
2529123	2	74LS00	U14,U47
4699250	1	3/32 Cable Tie	
312A016B	1	Trigger Delay Cable	
9999550	A/R	Hot melt glue	
2529178	1	74S74	U37
1529023	1	.1 mfd @ 20V ceramic monolithic	C79
2529273	1	74S251	U42
1375048	1	68 PF SILVER MICA CAPACITOR	C80



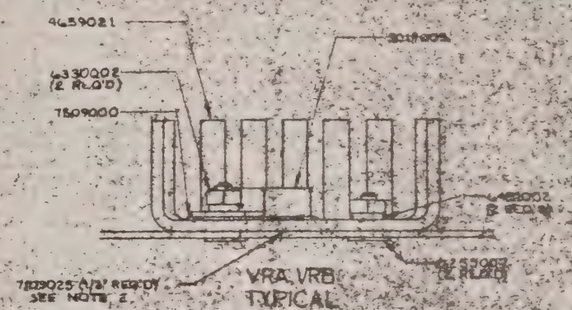


CABLE-TO-BOARD ASSEMBLY CHART		
HOUSING PIN LOCATION	COLOR	LOCATION ON BOARD
1	BROWN	U55, PIN 2 FEEDTHRU
2	BLACK	U56, PIN 7 FEEDTHRU
3	RED	U55, PIN 4 FEEDTHRU
4	BLACK	U55, PIN 5 FEEDTHRU
5	ORANGE	U55, PIN 6 FEEDTHRU
6	BLACK	U58, PIN 8
7	YELLOW	U18, PIN 6
8	BLACK	U18, PIN 7
9	GREEN	U72, PIN 5
11	BLUE	+5VB
12	BLACK	U72, PIN 7

* WIRES COMING FROM PIN LOCATIONS 1&2, 3&4, 5&6, 7&8 AND 9&12 ARE TO BE TWISTED PAIRS.

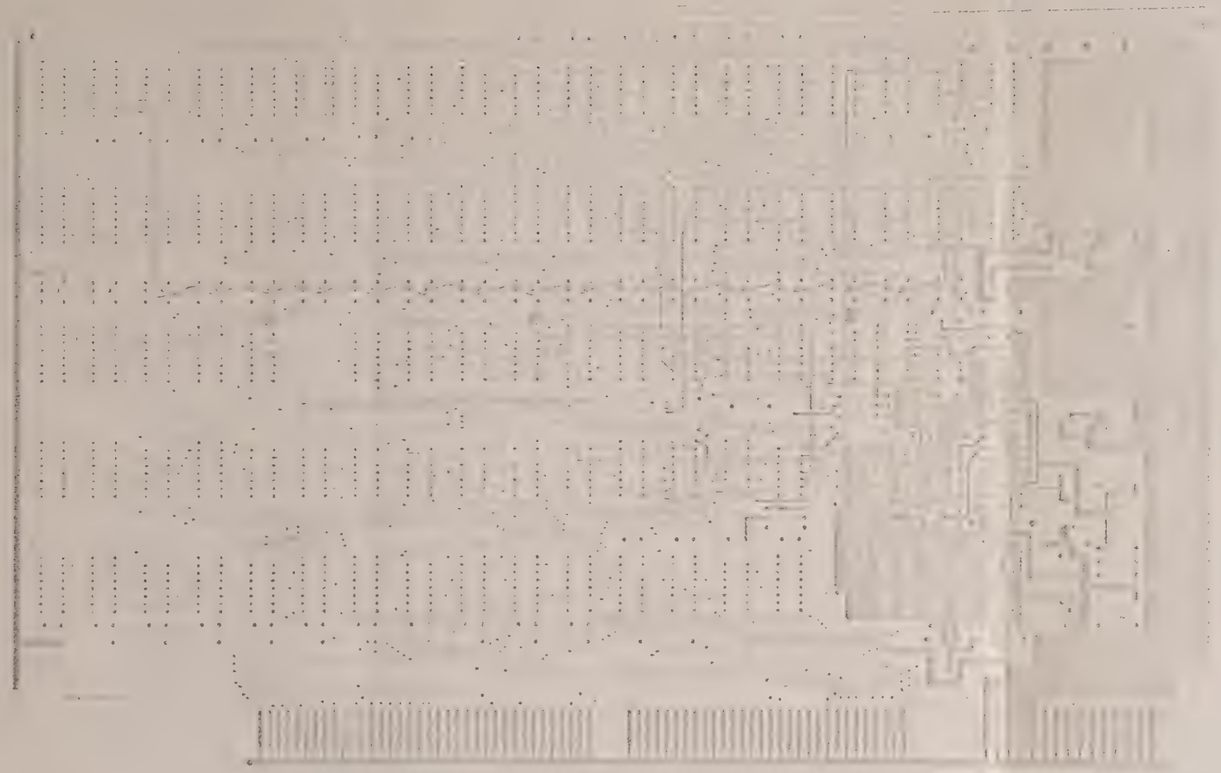


NOTE: IGNORE PIN LOCATIONS ON CONNECTOR, USE GUIDE ABOVE.



NOTES:
1. THE BOARD SHOULD BE CLEANED BEFORE THE VRA'S AND VRB'S ARE PUT ON. ONCE THE THERMAL COMPOUND IS APPLIED, THE BOARD SHOULD BE LEFT AS IS. THE DECREASE
2. .001 POLYESTER TAPE (7839025) TO INSULATE THE [illegible] HOLES UNDER THE HEAT SINKS.

NORLAND CORPORATION
A SUBSIDIARY OF CORDIS CORPORATION



COMPONENT SIDE

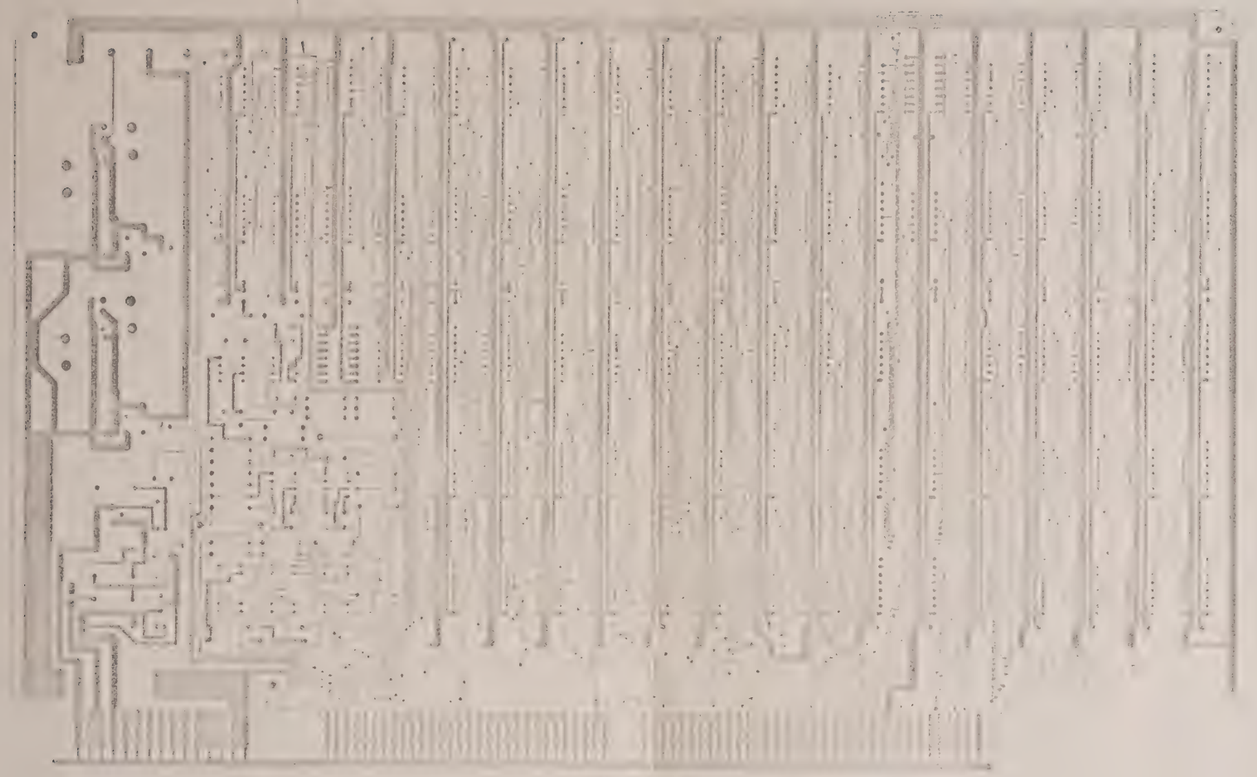
NORLAND

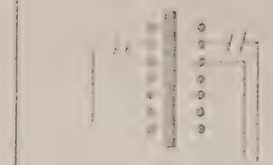
TIME BASE MODIFIED

3-2

GHS 7-13-81

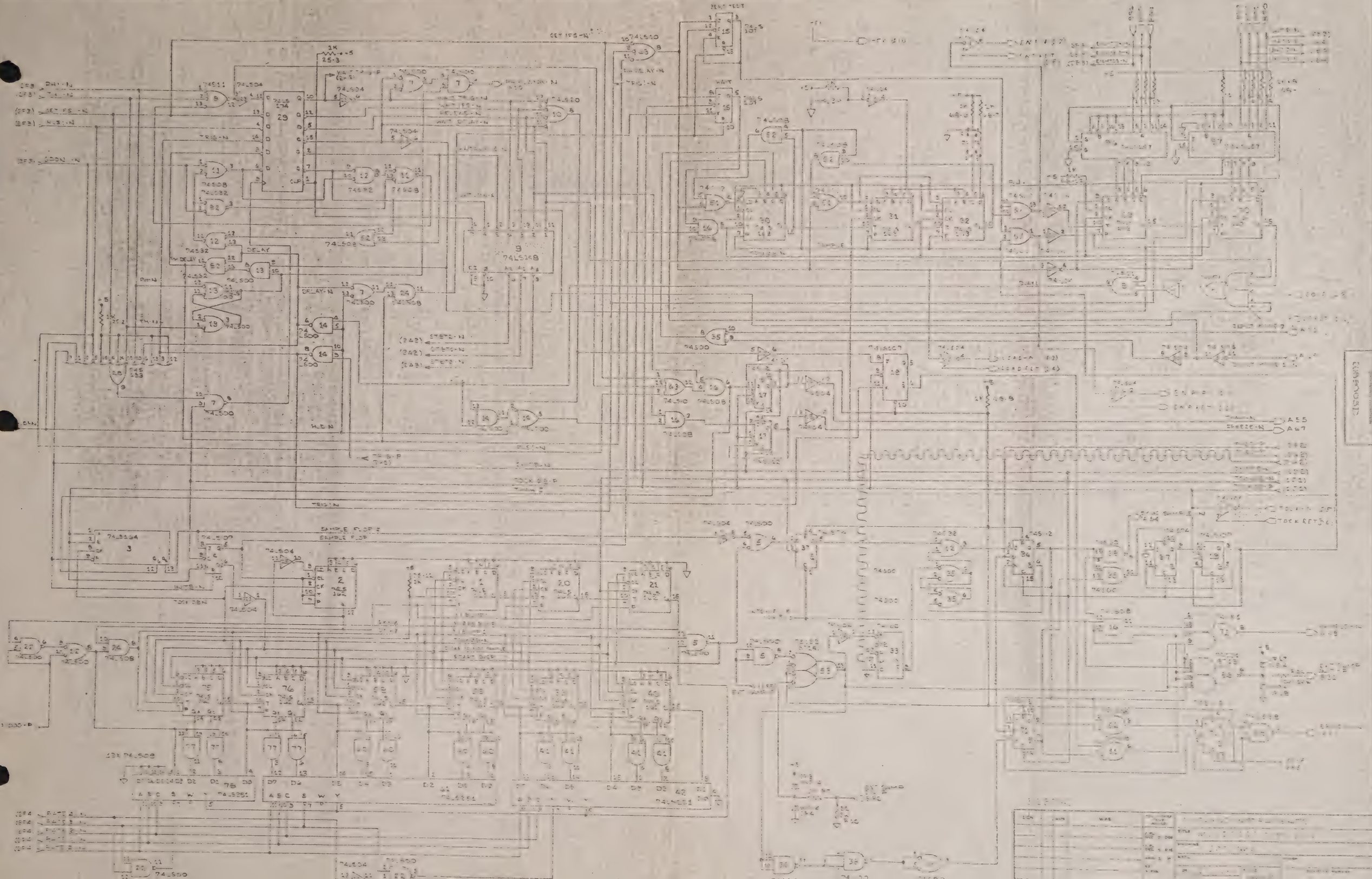
312-0141-D E





CUT P.C. RUNS, 2 PLACES

DETAIL C


74LS11
74LS04
74LS08
74LS32
74LS00
74LS20
74LS10
74LS168
74LS74
74LS107
74LS157
74LS244
74LS373
74LS86
74LS51
74LS54
74LS02
74LS38
74LS251
74LS85
74LS283
74LS161
74LS164
74LS107
74LS123
74LS221
74LS54
74LS27
74LS42
74LS54
74LS54
74LS54

NOTE:
THE 5.1Ω/10 & .01 µF CAPS MUST BE NO MORE THAN 1.5" FROM THE REGULATOR.

NOTE:
1. ALL GNDS ARE SIGNAL UNLESS NOTED.
2. ALL RESISTORS ARE 1/4 W CARBON COMP. OR DIP PACK UNLESS NOTED.
3. ALL DIODES ARE TO BE 1.5" AXIAL LEADED.

NOTE:
THE 22 µF, 10 µF & THE .01 µF CAPACITORS MUST BE NO MORE THAN 1.5" FROM THE REGULATOR.
BYPASSING IS DONE WITH MONOLITHIC CERAMIC CAPS.
#1-.01 µF CAP/3 I.C.S.

TRIG LEVEL POT ON FRONT PANEL

ECN	DATE	WAS

NORLAND INSTRUMENTS

MOTORIZED TIME BASE

3081 DMX

312B014D -3A

DRAWING NUMBER 2081000-03

MP MASTER
MA31922